Index to Reading Matter, Page 63

Index to Advertisements, Pages 65 - 67

The Metal Worker

A WEEKLY JOURNAL OF THE STOVE, ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. L. NUMBER 1. | NEW YORK AND CHICAGO, JULY 2, 1898. | ONE DOLLAR A YEAR. SINGLE COPIES, 5 CENTS.

AMERICAN SEAL

STOVE PUTTY.
FURNACE CEMENT.
ELASTIC OIL
ROOFING CEMENT.
ROOFING PAINT.

PUT UP ESPECIALLY FOR JOBBING TRADE.
WILLIAM CONNORS, Troy, N. Y.

The "Gorton Side-Feed" Boilers

WILL BURN HARD OR SOFT COAL.
You Want the Best. We Have It.
SEND FOR CATALOGUE AND INVESTIGATE FOR YOURSELF.
GORTON & LIDGERWOOD CO., 96 Liberty St., New York.
197-203 Congress St., Boston. Old Colony Bldg., Van Buren and Dearborn Sts., Chicago.

HOBSON IS ALL RIGHT—
So are CENTURY RANGES.
Send for new catalogue. Century Stove Co., Dighton, Mass.

EASTWOOD VALVE.

EASTWOOD WIRE MFG. CO., - Belleville, N. J.

YOU CANNOT AFFORD TO TRIFLE

with the trade of a man who can afford a furnace. Such a man has money to spend for everything you sell. He will spend it with you if you please him with his furnace. A man buys a furnace once for all. To be on the safe side sell him a furnace you know will suit The Paragon Furnace is the safe side.

ISAAC A. SHEPPARD & CO., New York, Philadelphia, Baltimore.

VANDERGRIFT APOLLO IRON & STEEL COMPANY BEST BLOOM TRADE MARK PITTSBURGH

APOLLO BEST BLOOM
GALVANIZED IRON

is true to gauge
No order to roll it thin is accepted;
and never has been.

Apollo Iron and Steel Company,
Pittsburgh, Pa.

Porcelain Wash Trays.

We are now prepared to furnish solid porcelain trays at about the cost of stone, bringing this best of all sanitary ware at reasonable prices.

E. S. WHEELER & CO.,
256 Water St., New Haven, Conn.
New York Store, 194 Front St.
New York Show Room, 160 Fifth Ave.
Boston Agency, 220 Devonshire St.

Sturtevant Blower System of . . . Heating and Ventilation.
B. F. STURTEVANT CO.,
CHICAGO. BOSTON. NEW YORK.

Williams Stove Lining Co., Taunton, Mass.
BEST QUALITY **STOVE LININGS**

Back Pressure Valves,
Pressure Regulating Valves, Radiator Valves, Steam Traps, Pump Governors, Water Seal Automatic Air Valves.
JUDSON A. GOODRICH CO.,
120 BEEKMAN ST., - - NEW YORK.

Steam Specialties.

Pump Governors, Steam Traps, Steam and Water Reducing Valves, Tank Temperature Regulators, Noiseless Back Pressure Valves, Water Arches, Oil Separators, Controller, and A No. 1 Damper.

T. KIELEY, 9-17 W. 13th St., NEW YORK.

WE CLAIM THE FOLLOWING MERITS FOR **JENKINS BROS.' VALVES.**

1. Manufactured of the best Steam Metal.
2. No regrinding, therefore not constantly wearing out the Seat of the Valves.
3. Contain JENKINS DISC, which is suitable for all Pressures of Steam, Oil and Acids.
4. The Easiest Repaired, and all parts Interchangeable.
5. Every Valve Tested before leaving the factory.
6. ALL GENUINE stamped with Trade-Mark.

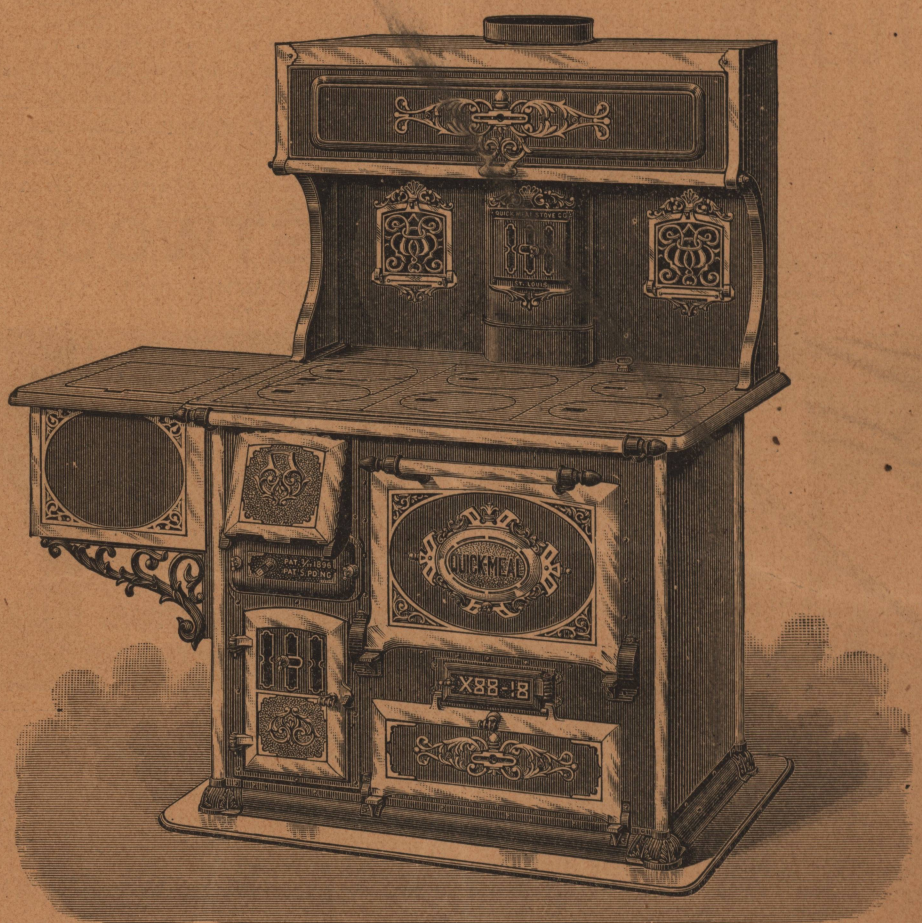
JENKINS BROTHERS, New York, Philadelphia, Chicago, Boston.

SEE THE MAGEE Announcement, PAGE 32.

QUICK MEAL QUICK MEAL QUICK MEAL THAT'S WHAT THEY ARE. QUICK MEAL QUICK MEAL QUICK MEAL QUICK MEAL

QUICK MEAL

STEEL RANGES



The position the "Quick Meal" Steel Range holds with the trade could not be held and maintained unless the goods had quality and merit to back them up.

"Quick Meal" Steel Ranges are made to work well, to wear well and to attract attention. These three qualities are what is required to make a good selling article, and the "Quick Meal" has them all. In appearance none are handsomer. In quality none can be better, and none could work better. We invite comparisons. Order a sample "Quick Meal" Range—place it alongside of your others and compare all carefully and we are confident that we will secure your trade.

Our Catalogue will be ready July 1st.

RINGEN STOVE Co. SAINT LOUIS

INTERNATIONAL HEATER CO.,

Main Office: UTICA, N. Y.

BRANCHES: New York, Boston, Chicago, and Syracuse, N. Y.

Successors to **The Old-Established Heater Manufacturers--**

RUSSEL WHEELER & SON,
KERNAN FURNACE CO.,
CARTON FURNACE CO.,
Of UTICA, N. Y., and
J. F. PEASE FURNACE CO.,
HOWARD FURNACE CO.,
Of SYRACUSE, N. Y.

Largest Makers of

Warm Air Furnaces, Combination Warm Air, Steam and Water Heaters, Steam and Hot Water Heaters,

and Jobbers of

Everything Pertaining to the Heating and Ventilating Trade.

Experience and Reputation Invite Confidence.

Address correspondence to our Main Office . . .

UTICA, N. Y.

The Clermont Oak.

This Oak Stove will give perfect satisfaction, is a great fuel saver and is made of best material by skilled workmen.

It has Patent Jointless Ash Box, and is absolutely air tight. Patent Screw Draft Register, which will supply any amount of air required. Hot Blast Smoke Combustion Register, which superheats the air before entering the fire chamber. Ball Bearing Grates, requiring little force to shake them. Corrugated Cast Iron Bowls, which will not crack. V-shaped Joints, giving greater durability. Patent Anti-Buckling Rings, durable and fuel saving. Grates for both coal and wood. Large Pipe Collars, and other important features. They are made in **HONEST SIZES,** with substantial weight and strength in every part.

OUR NEW MEDIUM PRICE

Clermont Oak.

Has practically a jointless Ash Pit. A perfect fire-keeper. Joints all ground on a lathe. Screw Draft Registers ground to fit perfectly air tight in both feed and ash pit door. It will admit any amount of draught desired and keep fire under perfect control. Asbestos cement in joints, Anti-Buckling Ring to keep drum from buckling and leaking air. Large Feed Door molded in one piece. Smoke Curtain. Ash Pit in one piece, except small strip on top of ash pit between ash pan door and bowl.

Nickel parts, Name Plate on feed door, Screw Draft Registers, Turn Buckle, Nickel Steel Top, elaborate Foot Rail, beautiful Spun Brass Urn.

5 Sizes—No. 110, No. 112, No. 114, No. 116, No. 118.

SEND FOR DESCRIPTIVE CIRCULARS.

The Gem City Stove Co.,

DAYTON, OHIO.

A DEALER'S IDEAL

Line of Ranges is our

"PENN ESTHER"

line. Trade requirements in range construction have in these ranges been embodied to an extent which leaves practically nothing for a dealer to wish for – and the many wants of customers in different sections have been anticipated.

FEATURES:

Right and Left Hand Ovens.
Surplus heat from oven utilized to heat an upper room without the use of expensive fittings.
Ventilated Oven.
Improved Read Check Damper.
Loose or solid end Hearth.
Capacious Ash Pan.
Sheet Flue Construction.
Large Cast Iron Water Front.
Choice of two styles of Grates.
With or without Reservoir.
With or without Thermometer in oven door.
High Warming Closet and two styles of Pipe Shelf.
Highly Nickel Plated.
Heavy, Durable, Handsome.
AND ALL THE LITTLE THINGS HOUSEKEEPERS ARE LOOKING FOR.

We have 11 sizes and 72 styles in this line, all designed to burn hard or soft coal or wood, and so low priced as to meet your views as to what constitutes an attractive, quick selling range. We have a little book illustrating all the styles and explaining the hundreds of little details in these ranges which we will send on receipt of your request.

The MT. PENN STOVE WKS., Reading, Pa.

PHILADELPHIA STORE, 111-113 N. 2nd STREET.

A NEW LINE

OF

"Reliable" Wrought Steel Ranges.

MEDIUM IN PRICE.

First class in every detail.

The very latest in design and finish.

A new and up-to-date range in every respect.

A money maker for the dealer.

Write us for circular and prices.

The Schneider & Trenkamp Co.,

Cleveland, Ohio.

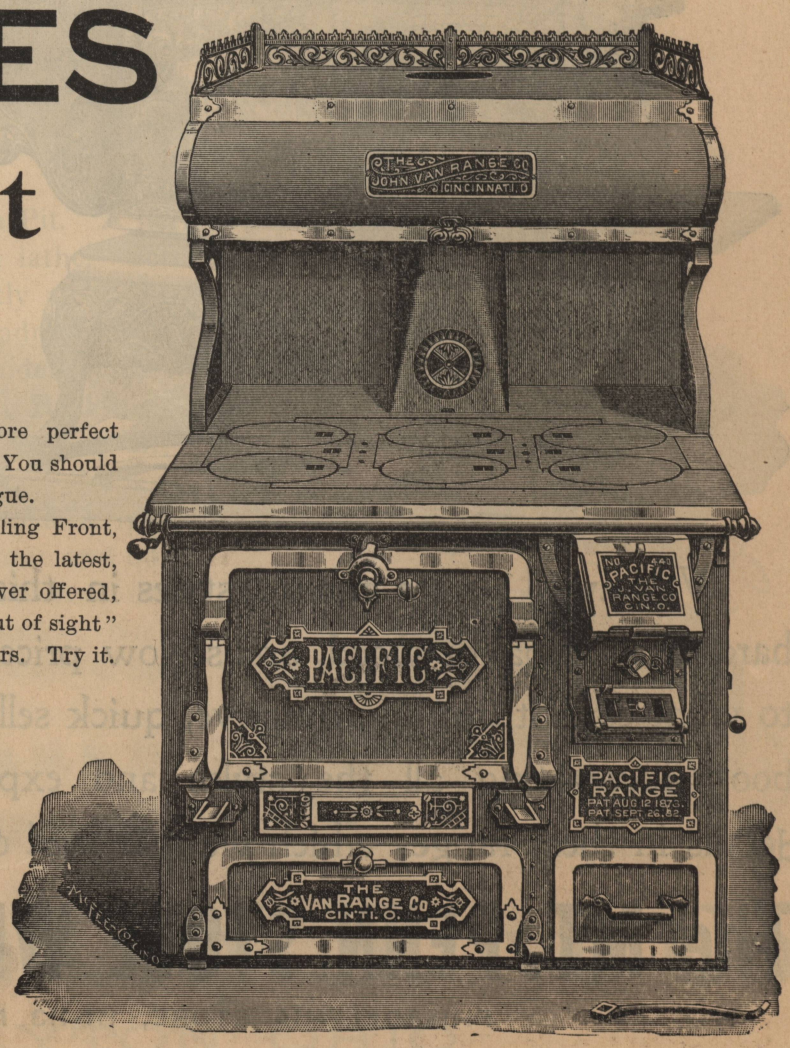
Chicago, Illinois.

PACIFIC RANGES Are Best

BECAUSE

They're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.



... THE ...

John Van Range Co.

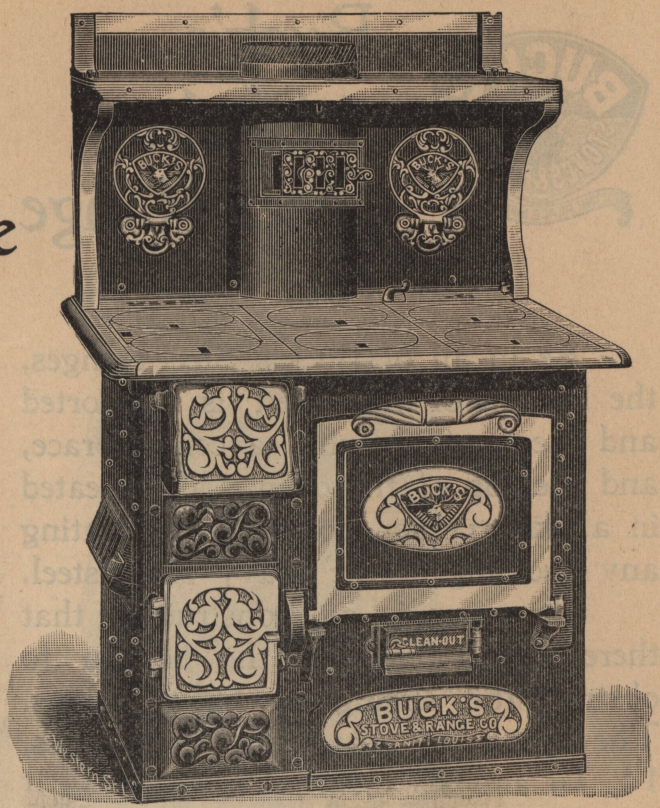
Warerooms:—419 ELM ST.;

Factories:—6-8-10 and 12 HOME ST.,

CINCINNATI, O.

Buck's Sterling Steel Range

With High Shelf.



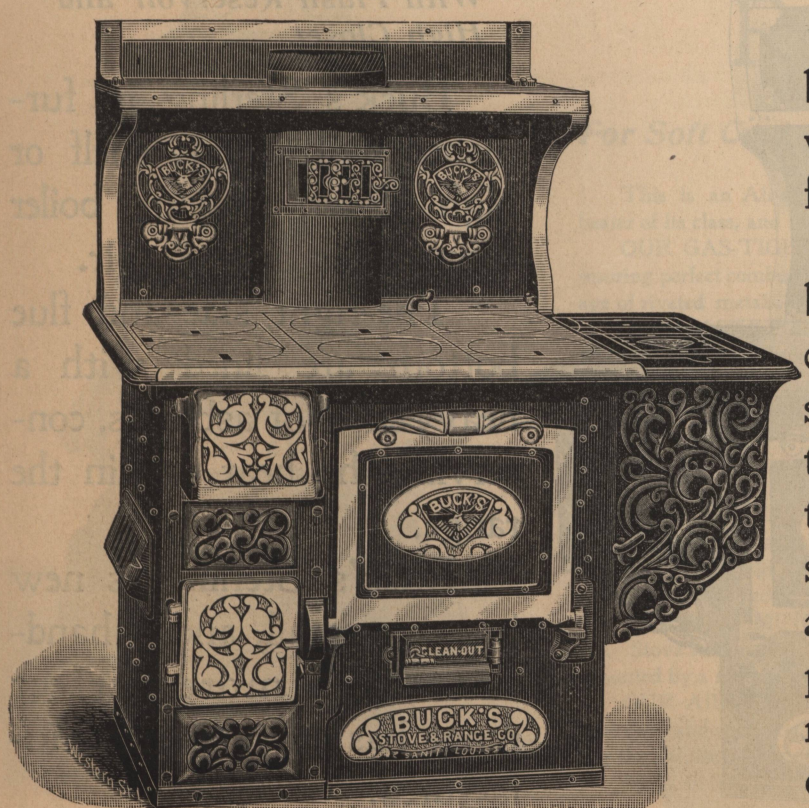
The scientific and practical evolution of steel range construction has resulted in the perfection of a popular priced range which embodies all the good points, including many new and original features, which have made Buck's Stoves and Ranges the patterns for the whole world to imitate.

Buck's Sterling Range is made for hard coal, for soft coal and for wood. The outward appearance is the same, the difference being in the fire linings.

A new idea has been introduced whereby the grate and grate rest may be easily removed by any person through the top without disturbing the water heater or fire linings.

Buck's Sterling Steel Range

With Flush Reservoir and High Shelf.



The Duplex Grate may be reversed at any time when desired to change fuel from coal to wood.

The Draft Damper is built upon the Buck principle along the side of range, supplying oxygen to the entire fire box from one end to the other. It is placed in such a manner that all dirt and ashes fall into the ash pan when the damper is moved instead of sifting over the floor.

BUCK'S STOVE & RANGE CO., St. Louis

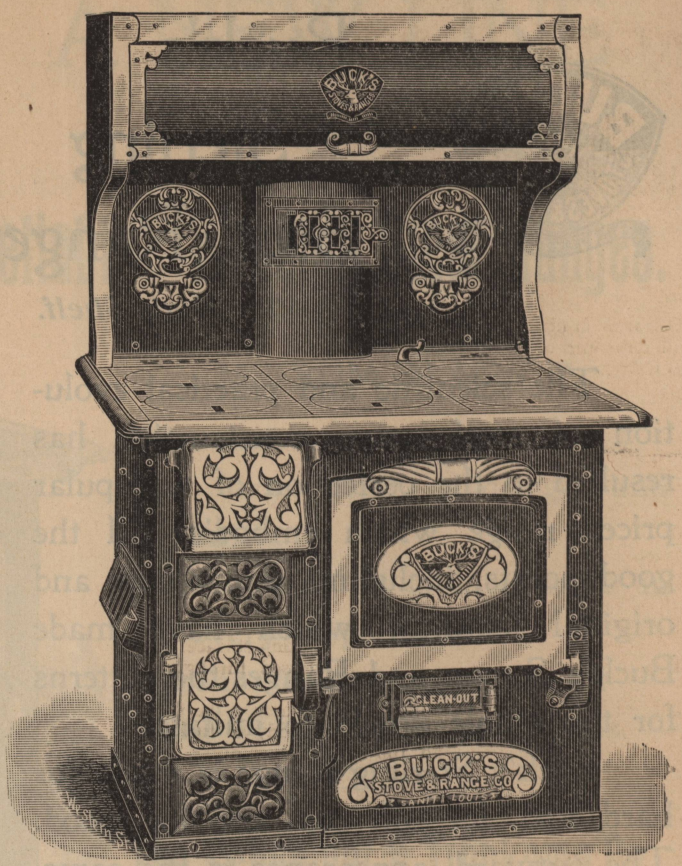
Buck's Sterling Steel Range

With High Closet.

As in all of Buck's Steel Ranges, the bottom of the oven is supported and kept rigid with a center brace, and the top of the oven is also treated in a like manner, positively preventing any buckling of the heavy sheet steel.

The oven is so constructed that there are no rivets in the bottom to obstruct the sliding of baking pans. The ovens are made in three sizes, 14, 16 and 18 inch.

The oven door and oven rack are finished in white enamel. The design is exceedingly clever and the workmanship is perfect. It is the heaviest range of its class. The nickeling is twice as heavily plated as is commonly used.



Buck's Sterling Steel Range

With Flush Reservoir and High Closet.

Buck's Sterling is furnished with high shelf or high closet, pressure boiler connections or reservoir.

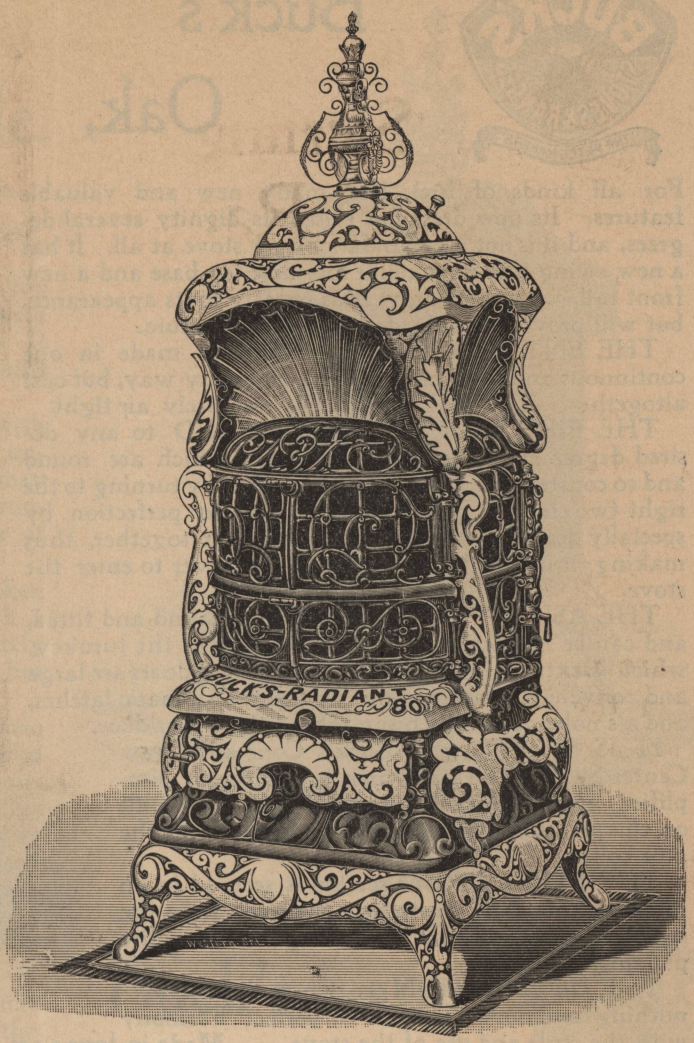
The right side and flue bottom are lined with a heavy sheet of asbestos, conserving the heat within the range.

Buck's Sterling is new in every detail, and a handsomer and more perfect range has never been manufactured.

BUCK'S STOVE & RANGE CO., St. Louis

Buck's Radiant

Hard Coal Base Burner for 1898-99.



We have spared no trouble or expense in preparing this model Base Burner of the year. Its new dress for this season is unusually artistic, chaste, refined and beautiful. The nickeling is so well done and of such good quality that the stove fairly sparkles with brightness, and its graceful lines are so well proportioned that it commends itself favorably to the most fastidious taste.

THE DOME REFLECTOR, while retaining all of its heat reflecting properties, has been richly decorated in a very handsome and original manner.

The nickeling is heavier than that used by other manufacturers, adding not only to its beauty, but making it much more durable. It takes a polish which makes common nickeling look tawdry in comparison.

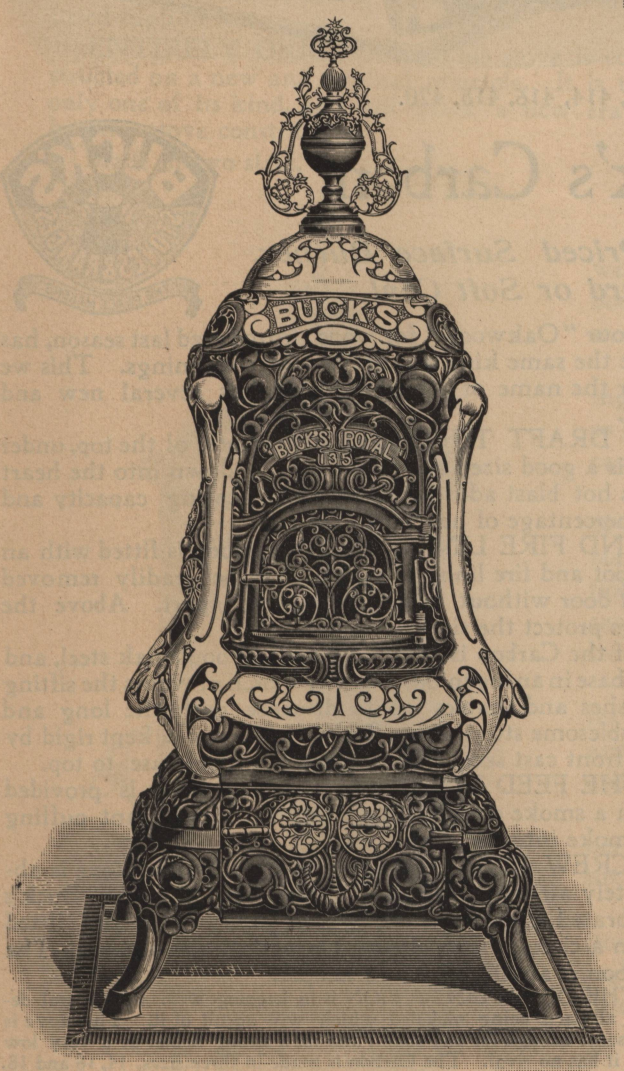
THE HOT AIR FLUES are constructed of the inside division flue plate. In other constructions these plates do not radiate any heat whatever. By our system of heating the air current as it passes up through these extra radiating surfaces, the greatest percentage of heat is radiated and diffused through the house.

THE FIRE POT is extra large, being nearly the same width at bottom as at top, giving a larger body of fuel and greater body of heat. To this end the combination duplex and shaking grate is also larger than usual.

EACH STOVE IS EQUIPPED with an upper heater, which is ready for use by simply attaching the pipe. No extra expense attends this feature.

THE MAGAZINE, fire pot, fire pot ring, grate, ash-pit top—all the vitals of internal organism—may be removed readily through the front door.

Made in three sizes, 60, 70 and 80.



Buck's Royal

For Soft Coal, in its New Dress for 1898-99.

This is an Air-tight, Gas-tight Parlor Furnace; is the strongest heater of its class, and the most elegant soft coal stove in the market.

OUR GAS-TIGHT DOME is made in one piece of cast iron, insuring perfect combustion, there being no warping nor unequal shrinkage of riveted metals.

OUR BASKET GRATE FRAME and Draw and Cone Center Grate has been greatly improved, and we know that it will prevent the fire pot from burning out and cause a better and cleaner combustion on account of the increased grate surface.

OUR VERY LARGE FEED DOOR allows the free use of all sizes of coal. The door has large mica illumination, protected by perforated tin.

BUCK'S ROYAL is built with an outer section or jacket, which is readily removed, allowing the stove to be easily handled. The dome is bolted to the outside of the fire pot, which prevents bolts from rusting or burning off or becoming immovable.

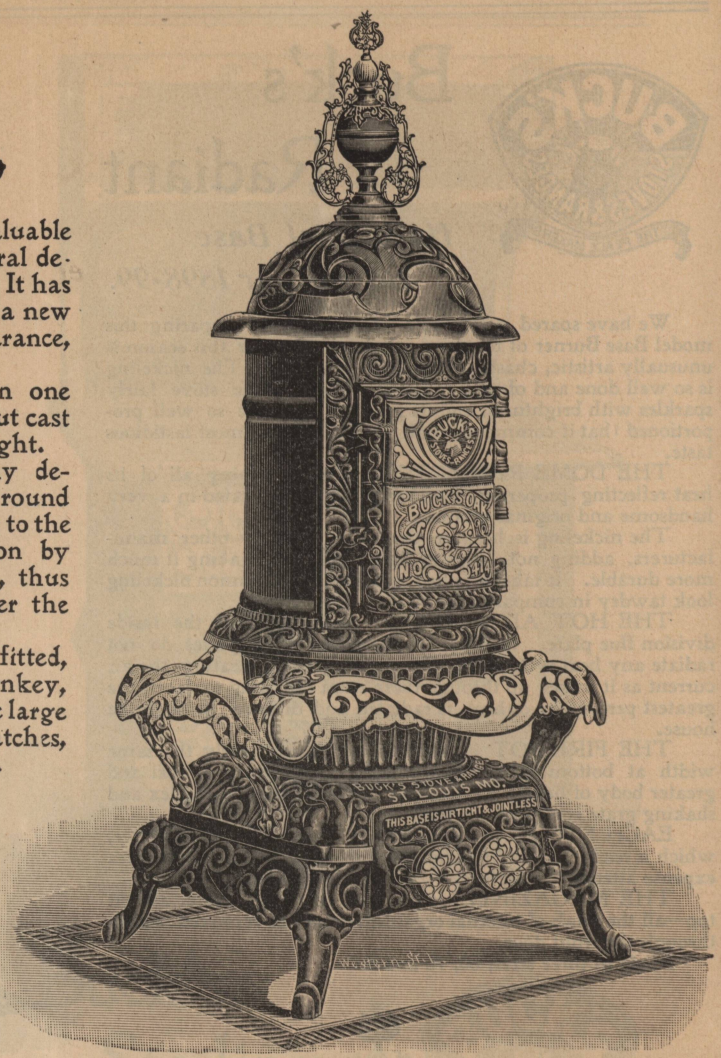
THE TRIMMINGS and Ornamentation are artistic and graceful. Stove sets on solid and handsomely designed leg base, and is surmounted by a nickel swing cover and an urn of rare beauty.

OUR AIR-TIGHT BASE has large ash-pan, easy to handle, base door and screw register dampers ground and carefully fitted, insuring the keeping of fire over night without the waste of fuel.

Made in three sizes, 135, 137 and 139.

BUCK'S STOVE & RANGE CO., St. Louis

Buck's Oak,



For all kinds of fuel, has many new and valuable features. Its new dress has raised its dignity several degrees, and it is not a common looking stove at all. It has a new swing top, new collar top, new leg base and a new front rail, which not only adds greatly to its appearance, but will prove a popular foot-warming feature.

THE ENTIRE BASE and ash-pit are made in one continuous and solid piece, not joined in any way, but cast altogether. This makes the stove absolutely air tight.

THE FIRE MAY BE CONTROLLED to any desired degree by the use of the dampers, which are round and so constructed on a screw center that by turning to the right two circular ground seats, trued to perfection by specially designed machinery, are brought together, thus making it impossible for any air whatever to enter the stove.

THE ASH-PIT DOOR is carefully ground and fitted, and can be hermetically closed by the use of the turnkey, which is extra large and strong. The feed doors are large and convenient, fastened by air-tight, automatic latches, and a smoke curtain is hung behind the upper door.

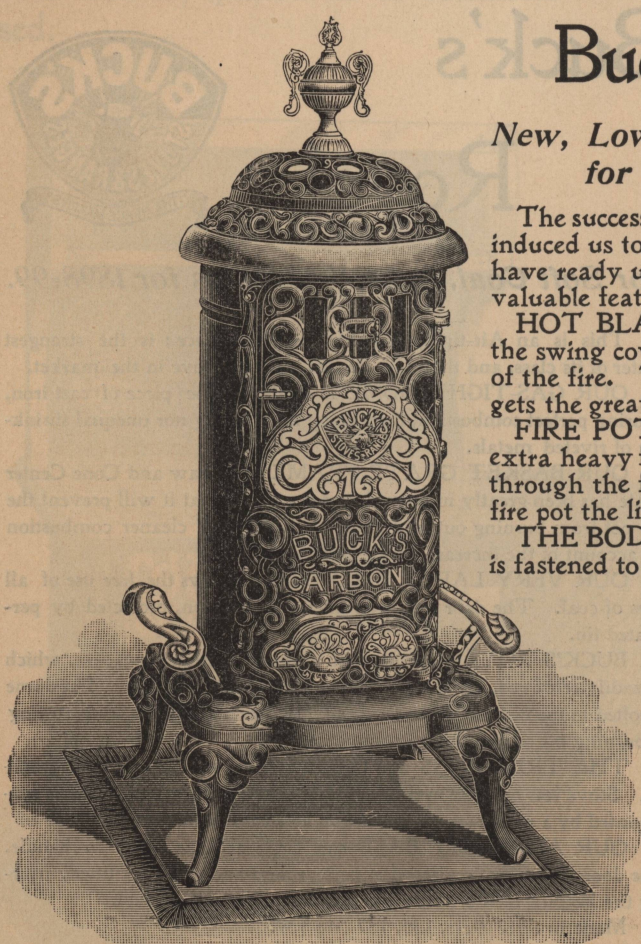
IT IS FITTED with Buck's Cone and Draw Center Shaking Grate, which is perfection simplified, and is the only successful grate ever built on this principle. The check damper is in the pipe collar.

THE STEEL DRUM section is secured in an improved manner, protecting the steel from the fire, and preventing the "buckling" of the fire pot ring and drum.

THE DECORATION is rich and tasteful—nothing overdone—but all in perfect harmony with the style and use of the stove. Made in four sizes, 414, 416, 418, 420.

Buck's Carbon.

New, Low-Priced Surface Burner, for Hard or Soft Coal.



The success of our "Oakwood" for wood, introduced last season, has induced us to line the same kind of a stove with coal linings. This we have ready under the name of "Carbon." It has several new and valuable features.

HOT BLAST DRAFT TUBE. From the center of the top, under the swing cover, is a good sized air tube reaching down into the heart of the fire. This hot blast adds greatly to the heating capacity and gets the greatest percentage of heat from the coal.

FIRE POT AND FIRE LININGS. The Carbon is fitted with an extra heavy fire pot and fire linings, which may be readily removed through the front door without taking the stove apart. Above the fire pot the linings protect the sides.

THE BODY of the Carbon is made of heavy Wood's oak steel, and is fastened to the base in an ingenious manner which prevents the sifting of ashes and enables us to dispense with the long and troublesome stove rods. The whole stove is kept rigid by the front cast section which extends from base to top.

THE FEED DOOR is extra large and is provided with a smoke curtain preventing the unpleasant puffing of smoke into the room.

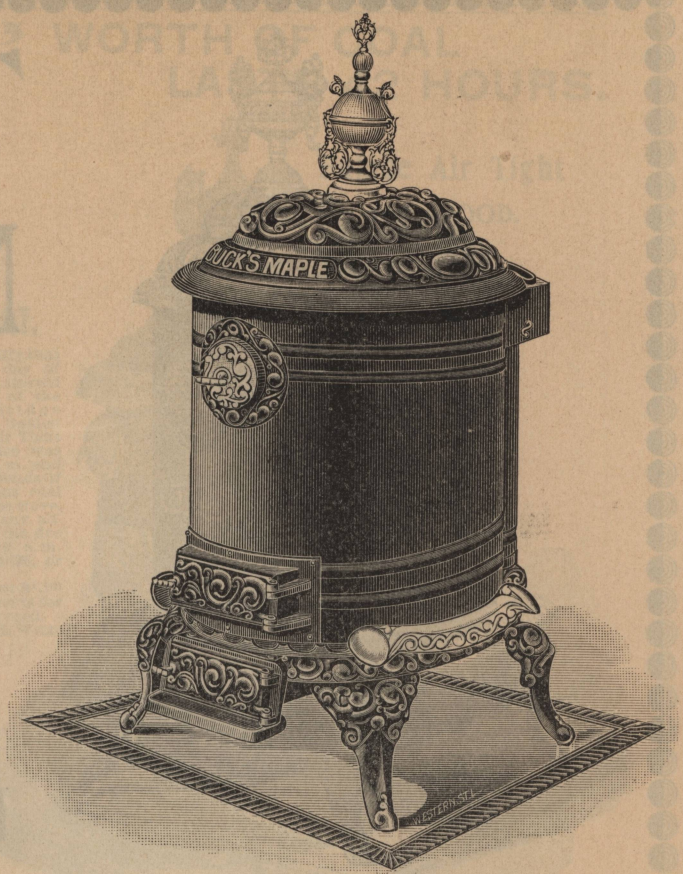
SCREW REGISTER DAMPERS. The stove is absolutely air tight, the draft being regulated by Buck's celebrated screw registers, which are ground and fitted upon a circular seat, closing hermetically if desired. The Carbon is an all night fire keeper.

THE ORNAMENTATION is in keeping with the general design, all parts being nickeled which will admit of it. The stove is handsome enough for any room, and for a strong heater at a very low price it has no rival. The Carbon is made in three sizes, 14, 16 and 18.

BUCK'S STOVE & RANGE CO., St. Louis

Buck's Maple.

New Double Diving-Flue Wood Heater.



No. 23, No. 25.

This is a genuine novelty, made with cast top and base, mounted with Russia iron body, lined with heavy sheet steel and handsomely decorated. It has a nickeled foot rail on each side, a handsome urn and swing top.

DIVING FLUES. There is a down flue with heavy cast linings each side of the fire, uniting underneath like a cook stove, passing up the chimney in a separate flue at the back. Stove may be converted into direct draft by turning the damper at pipe collar.

DAMPERS AND DRAFTS. The air is taken into this stove at the top of the body through a screw register damper which can be closed absolutely tight. It is conducted downward through a hot blast flue to the heart of the fire.

ASH AND FLUE DOORS. There are two doors at the base, one for the removal of ashes and the other as a clean-out for the flues in the base. Altogether it is complete and will be as popular as any heater ever introduced. We recommend it to be economical with fuel and satisfactory in every respect.

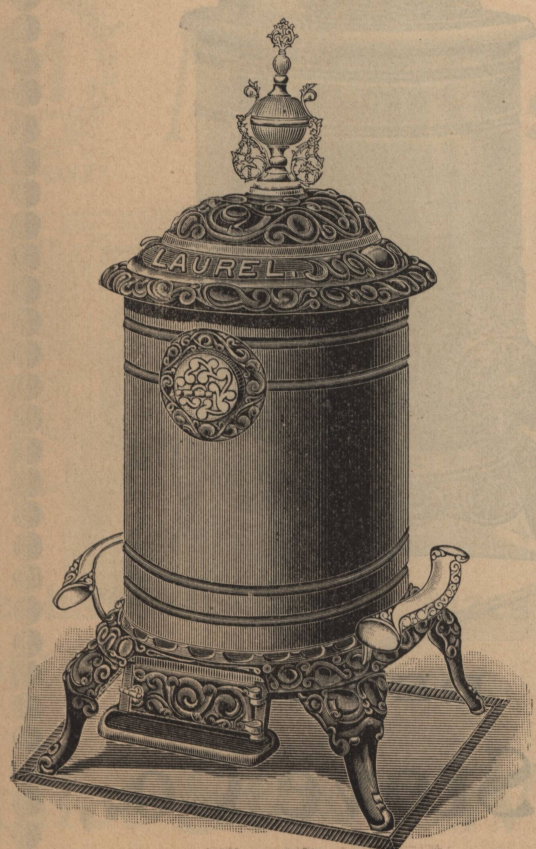
REVERSIBLE COLLAR. Buck's Maple is fitted with reversible collar, allowing the pipe to be fitted high or low.

ENTIRELY ORIGINAL. This stove is constructed on a new and original principle. It is the only one of its kind, and will mark a new era in heating stove construction.

Made in two sizes.

Buck's Laurel.

New Air-Tight Wood Heater.



21, 23, 25, 27 INCH.

TOP AND BASE. This stove, with cast top and base, is well fitted and mounted. It is made in two styles: Russia iron body and high heavy steel linings, also with Wood's best oak steel body without linings.

It has two nickeled foot rails, swing top and large feed opening for wood. The door to ash-pit is large and well fitted, and so constructed that the ashes accumulate naturally where they can be most easily removed.

THE DRAFT DAMPER is placed at the top of the front of the body, admitting air at the upper end of a cast iron hot blast flue, whence it is conducted downward to the hottest portion of the fire. In addition to its merits as a hot blast flue, this cast iron section running from base to top braces the body of the stove.

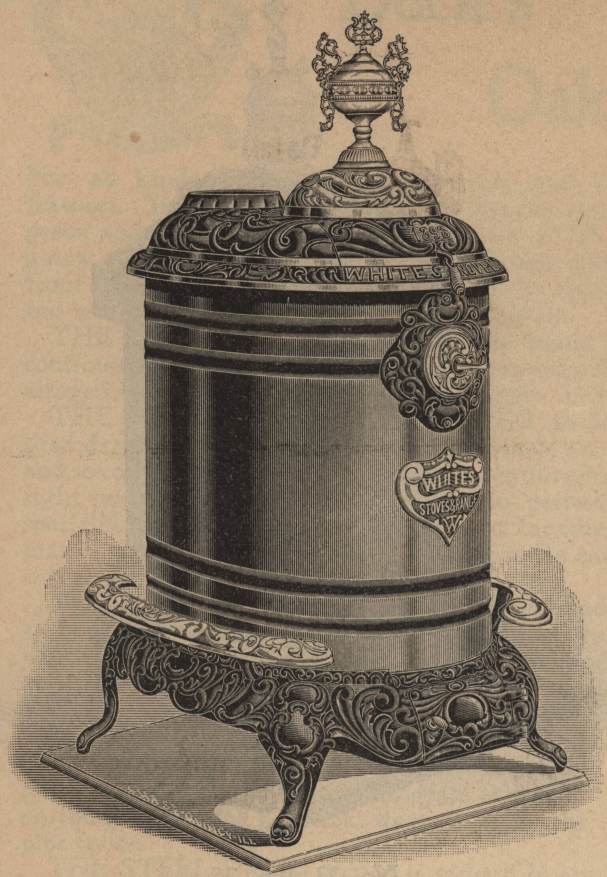
The Draft Opening is fitted with one of Buck's Screw Register Dampers, carefully ground and fitted by special machinery and working so perfectly that when closed the joint is actually and positively air tight.

The stove is fastened together in a novel and original manner without the use of rods, and it is impossible for ashes to ever sift through upon the floor.

AS A HEATER. Everybody knows how fiercely these stoves will heat, and this being made so durable and its fire keeping properties so perfect, it cannot fail to make its way in the field because it is so economical in price.

Made in four sizes; two styles.

BUCK'S STOVE & RANGE CO., St. Louis



NOVELTY.

The Novelty

is mounted with heavy polished steel. Has a deep cast bottom and cast top. Hot Blast, Top Draft, with Air-Tight Damper, Ash Door in bottom, Base Skirting, Nickeled Foot Rails, Panel, Damper, Urn and Urn Bottom.

Made in Two Sizes,

Nos. 22 and 26.

The Derby

has Cast Top and Bottom, Polished Steel Jacket, Nickeled Foot Rails and Urn.

Made in Two Sizes,

Nos. 21 and 26.

Has Reducing Ring in Feed Opening that permits the use of a No. 8 vessel directly over the fire.

DERBY.

For Catalogue and Prices write the

Thomas White Stove Co.,

QUINCY, ILL.

2 CENTS' WORTH OF COAL LASTS 42 HOURS.

Palace Air Tight
For HARD COAL,
SOFT COAL or COKE.

AFFIDAVIT.

This is to certify that on the 12th day of March, 1898, I started a fire in one of the Duffy-Trowbridge Stove Co's Golden Rule Palace Air Tight Stoves; the fire was lighted at 4 p. m. and twenty-five pounds of soft bituminous coal was put in the stove, and without any addition of fuel the fire lasted until 10 a. m. March 14th, 1898, or 42 hours.

This coal cost $1.60 per ton, or 2 cents for the 25 pounds used.

C. H. WILD.

Palace Air Tight
FOR WOOD.

Better than any Oak Stove.
Equal to any Base Burner.
No. 23, 10 inch Fire Pot.
No. 25, 12 inch Fire Pot.
No. 27, 15 inch Fire Pot.

Duffy-Trowbridge Stove Mfg. Co.,
Sole Manufacturers,
Hannibal, Mo.
Secure Agency before too late.

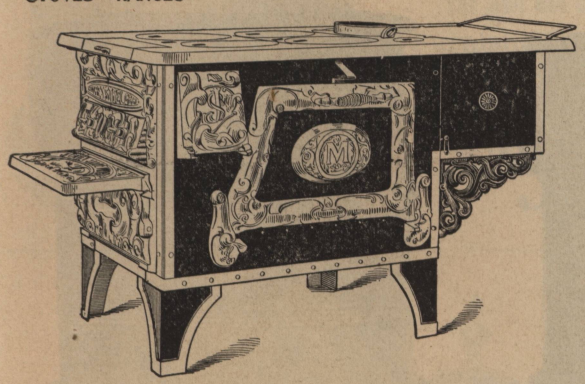
Better than any Todd Stove.
Equal to Base Heater.
Fire Never Goes Out.
No. 23, 21 inch wood.
No. 25, 25 inch wood.
No. 27, 27 inch wood.

C. A. TROWBRIDGE, 108 3d Ave., North, Minneapolis, Minn., Agent for North and South Dakota, Wisconsin and Minnesota.

THE NEWEST THING IN STEEL.

M TRADE MARK
STOVES AND RANGES

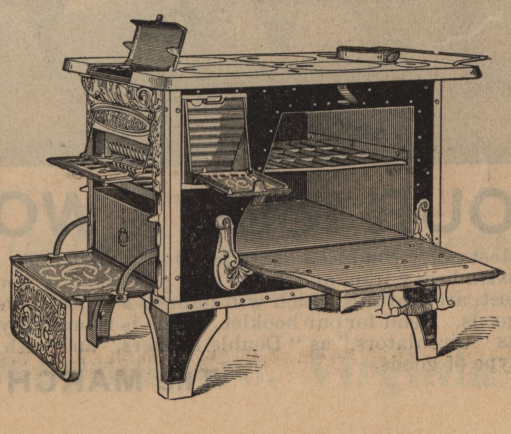
Moore's Steel Gem.



"It Cooks Quick."

A Steel Cook Stove unequaled for rapidity of oven, economy of fuel and durability. Just what you want as a leader.

We have it in all sizes and at POPULAR PRICES.



Joliet Stove Works,

JOLIET, ILLS.

New York and Vicinity Supplied by GEORGE STARRETT,
227-229 Water Street, New York.

THE BEST RANGE FINDER

Is the man who sees for the first time

OUR IMPROVED 1898

No. 18 Faultless Range.

IT HAS NO EQUAL IN THIS MARKET.

Portable or Brick-Set.

Right or Left Fire Box.

With or Without Water Back.

ELEGANT IN DESIGN. PERFECT IN OPERATION.

Call and see it the first opportunity.

GRAFF & COMPANY, - 208 Water St., New York.

OUR 1898 "WOOD OVAL" AIR TIGHTS

Meet every condition of trade. Joints absolutely air and water tight; heavy cast iron tops and bottoms; inside bodies of extra heavy iron, and inside rods protected by wrought iron pipe; nickel tops, nickel foot rails, registers and frames, and bolted feet, are features which will impress a prospective buyer. These are only a few of the advantages possessed by this line of goods. Send for our booklet, which is thoroughly explanatory of the merits of the WOOD OVAL line This line also made as "Circulators," as "Double Heaters," and with Extension Tops. We offer an assortment larger than ever offered in this type of goods.

The MARCH-BROWNBACK STOVE CO., Pottstown, Pa.

THE FORBES WARM AIR FURNACE.

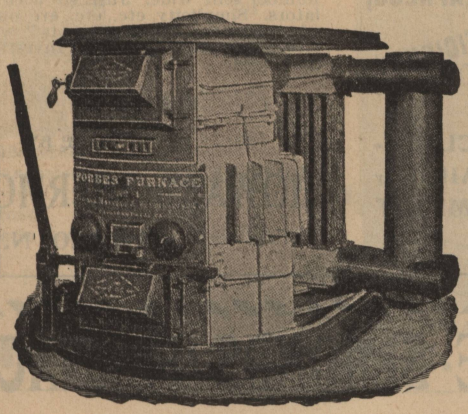
I. NEWTON EVANS,
REAL ESTATE,
HATBORO, PA.

TUESDAY AND FRIDAY,
221 SOUTH FIFTH STREET,
PHILADELPHIA.

HATBORO, PA., Dec. 26th, 1896.

MR. JNO. FORBES,
Mgr. TUBULAR HEATING AND VENTILATING CO.
MY DEAR SIR :
In reply to your inquiry about the Forbes Furnace, would say I think it will be all you claimed for it. We have now had it about a month, and although the weather has not reached zero, it has been down to 10 degrees above. We have not had any difficulty in keeping our rooms comfortable, and do not think we shall during the remainder of the winter. It is easily managed and I think economical in the consumption of coal. Very truly, I. N. EVANS.

SEND FOR CATALOGUE



COLD SMOKE PIPE.

HOT AIR PIPE.

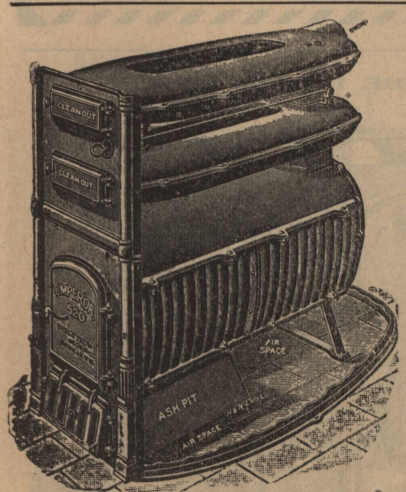
Heats with one-third to one-half the coal used by other furnaces.

Only 4 feet 3 inches high in the Largest Sizes.

... LOW PRICE ...

TUBULAR HEATING AND VENTILATING COMPANY,

228 QUARRY STREET, PHILADELPHIA.



EMPEROR FURNACES

FOR WOOD.

Simple, Safe, Durable

ECONOMICAL IN FUEL.

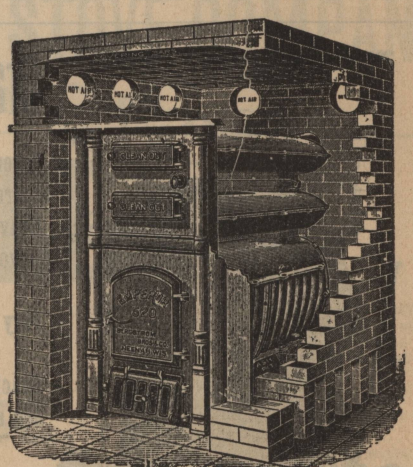
The Best and Cheapest Line of Wood Furnaces.

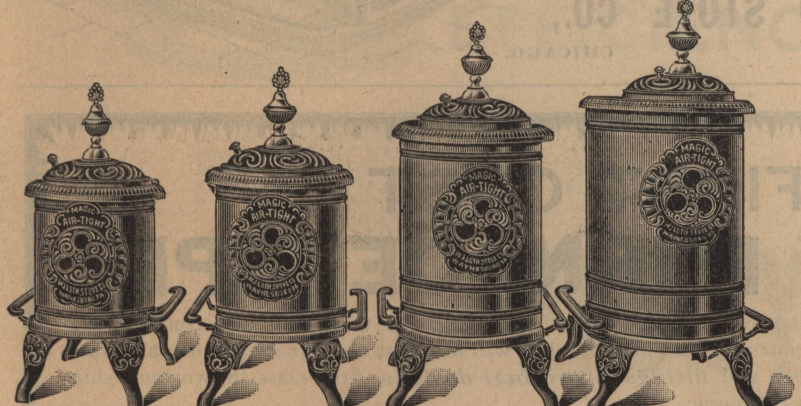
Furnished for either Brick or Galvanized iron Casing.

SEND FOR CATALOGUE.

Bergstrom Bros Co.

NEENAH, WIS.





"Magic Air-Tight."

PATENTED.

Beats

Splendidly Proportioned. Them Securely Built.

All.

Cast Iron { Top, Bottom, Flue, Hinged Feed Cover, Foot Rails, etc.

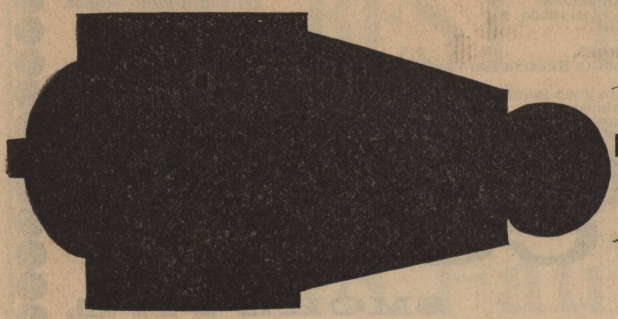
Extra Large Feed Hole.

The Best and the Cheapest

Also manufacture a full line of Ranges, Cooks and Heaters. Agencies wanted everywhere. Send for cuts and prices.

THE W. J. LOTH STOVE CO., Waynesboro, Virginia.

SHOTS THAT COUNT.



SIMPLICITY,
DURABILITY,
CHEAPNESS,
EFFICIENCY,

IT does not depend upon **ELECTRICITY, VAPOR, CLOCK-WORK, WEIGHTS, WATER** or **COMPRESSED AIR** for power, but simply contraction and expansion of **COMPACT MATERIAL** which is guaranteed to last a lifetime.

HOWARD

AUTOMATIC DRAFT REGULATOR.

One shot that hits the mark is worth an unlimited number sent wide. Just so with Temperature Regulators. Simplicity, etc., etc., are our undisputed points of excellence; they are "shots" which are effective at either short or long range. Investigate and you will be convinced.

MADE BY

HOWARD THERMOSTAT CO.,

OSWEGO, N. Y.

THE SIMONDS FURNACE CO.,

SUCCESSORS TO THE SIMONDS MANUFACTURING CO.,

No. 50 CLIFF ST., NEW YORK,

Manufacturers of the Celebrated

"CULVER AND MONTANA FURNACES."

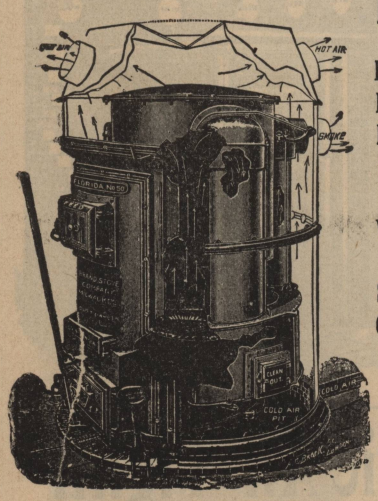
Double and Single Oven Ranges, with special features and latest designs.

STEAM AND HOT WATER BOILERS

Our new Elliptic Furnace has unequaled radiating surface and is sure to give satisfaction.

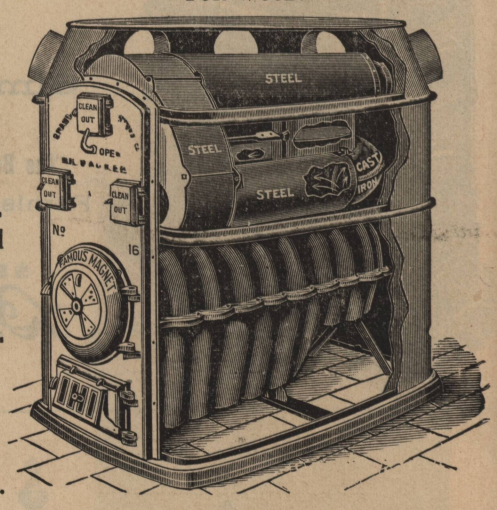
Send for Catalogues and Prices.

THE FAMOUS FLORIDA.
FOR COAL.



Brand's Famous Furnaces.

THE FAMOUS MAGNET.
FOR WOOD.



Revertible Flues.
Extra Large Radiator.
Heavy Fire Pot.
Revolving or Flat Grates.
Very Large Ash Pit Door.
Spacious Ash Pit.
Gas and Dust Proof.

Efficiency in Heating.
Large Radiating Surface.
Easy Access to Radiator.
Durability Unsurpassed
Made in 3 Sizes.
38-50-60 Inch Fire Boxes.

WRITE FOR CATALOGUE.

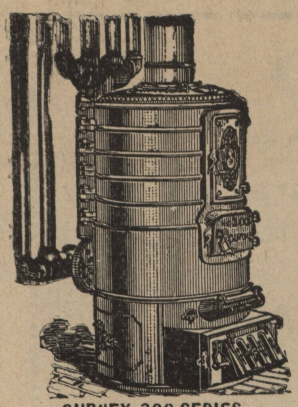
BRAND STOVE CO.,

MILWAUKEE. CHICAGO.

THE FIRST COST OF SAFETY FURNACE PIPE

May meet with objection from some dealers who consider price before quality, but if they will also consider the ***amount*** and ***cost*** of ***labor saved*** by using our pipe and fittings, they will find first class quality at a reasonable price. We manufacture a great variety of ***pipes*** and ***fittings*** in ***original designs,*** first class in workmanship and general utility. Will be glad to mail ***you*** catalogue.

SAFETY FURNACE PIPE CO, 11 and 13 E. Atwater Street, Detroit, Mich.



GURNEY 300 SERIES
Hot Water Heater.

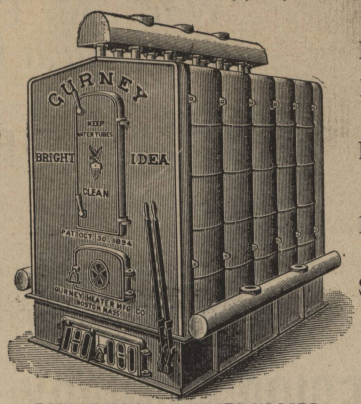
Send for Latest Serial Trade Catalogue.

New York Branch:
48 Centre St, New York City.

Gurney

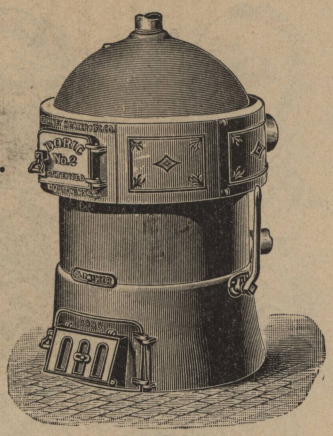
THE STANDARD OF THE WORLD FOR STEAM AND HOT WATER HEATING.

UNRIVALLED for COMPACTNESS, — RAPIDITY in CIRCULATION, — SIMPLICITY.



BRIGHT IDEA HOT WATER HEATER.

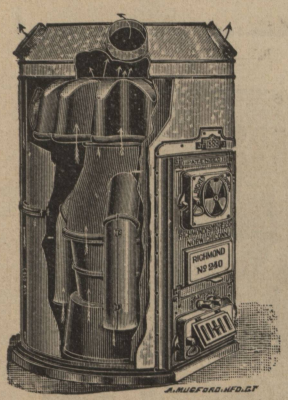
ECONOMICAL IN FUEL. — EFFICIENT and DURABLE. — SOLD ONLY THROUGH THE TRADE.



"DORIC"
Seamless Tubular Hot Water Heater.

Works:
E. Boston, Mass.

GURNEY HEATER MFG. CO. 74 Franklin St., cor. Arch, **BOSTON, MASS.**



RICHMOND FURNACES.

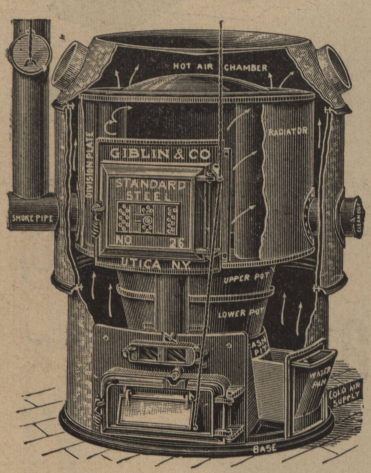
10 STYLES. 47 SIZES.

Write for Catalogue.

New York Office,
85 CENTRE STREET.

THE RICHMOND STOVE COMPANY,

Norwich, Conn.



IN THE CELLAR

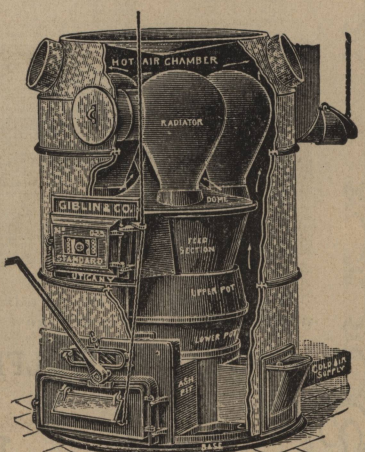
a furnace must prove its worth A handsome toy may be designed, and exaggerated statements made of its efficiency, but the test of all is what it will do

IN THE HOUSE,

and when efficient in its working it is the furnace to buy regardless of all statements and claims.

EFFICIENCY of STANDARD

Furnaces is guaranteed by their long use and the continued increased demand for them. Where they are known they sell; where they are not known the dealer is losing a chance to secure a prosperous business.
Besides their efficiency they are



EASILY ERECTED, OPERATED, COALED.

DEALERS DON'T KNOW how much information they can gain by our catalogue. It instructs about furnaces in GENERAL and our furnaces in PARTICULAR.

WRITE FOR IT.

GIBLIN & CO.,

UTICA, N. Y.

SUPERIOR

Warm Air Furnaces are not only economical but powerful Heaters!

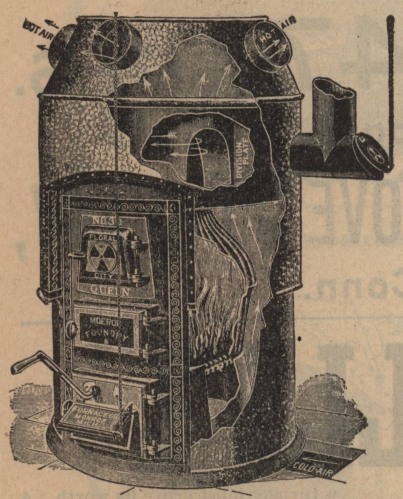
STRICTLY FIRST CLASS.

Thoroughly modern and up-to-date in every feature. See them, be convinced, and you will buy no other!

SEND FOR CATALOGUE AND PRICES.

SUPERIOR FOUNDRY CO., Manufacturers,
LITTLE FALLS, N. Y.

The Floral City Furnaces.

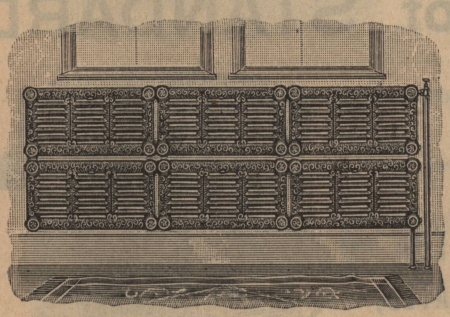


Agents wanted for our Complete Line of Coal and Wood Furnaces, Hot Water and Steam Boilers.

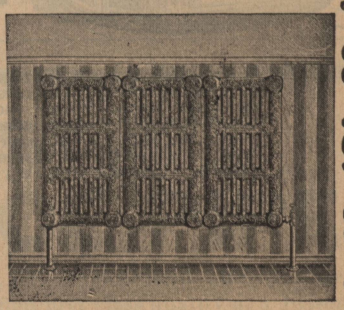
Write for catalogue and prices.

Monroe Foundry and Furnace Co.,
MONROE, MICH.

Fowler and Wolfe Wall Radiators.



MAXIMUM SURFACE.
MINIMUM SPACE.

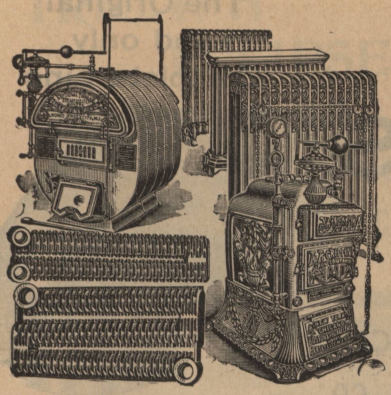


STANDARD SECTIONS, 7 sq. ft. surface,
24 inches long, 12½ inches wide.
MEDIUM SECTIONS, 6 sq. ft. surface,
21 inches long, 12½ inches wide.
SHORT SECTIONS, 5 sq. ft. surface,
17 inches long, 12½ inches wide.

Important tests of this Radiator have recently been made at Cornell University which prove that it is the most efficient Radiator ever made. Write us for "Table of Comparative Results of Tests."

FOWLER & WOLFE MANUFACTURING CO., 664 Bourse Bldg., Philadelphia, Pa.

Write for Catalogue.



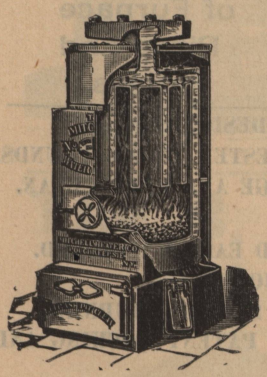
"SURE CURE FOR A COLD HOUSE."

Bundy TRADE MARK

HEATERS and RADIATORS.

A. A. GRIFFING IRON CO.

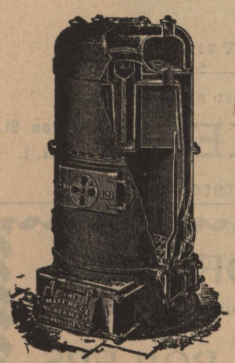
66-68 Centre Street, . . NEW YORK.
BOSTON. PHILADELPHIA.
Works, JERSEY CITY.
Send for Book—MW.



The Mitchell Water Heater.

Has no Joints to Burn Out or Leak.
Heating Surface all in One Casting.
Water Passages all Vertical.
Largest Amount of Fire Surface

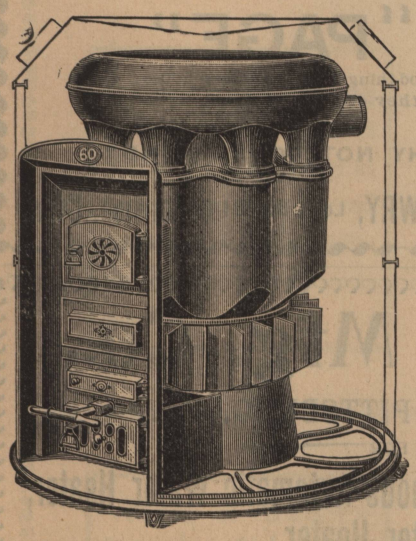
OUR 100 SERIES FOR STEAM OR HOT WATER.



Is constructed on the same general principle, but arranged to be used without jacket.

If you have competition and want to make a low estimate to secure the job, we can help you do it.

Write for . . . . Catalogue and Prices.. THE MITCHELL HEATER CO., 50-60 Pine St., POUGHKEEPSIE, N. Y.



CORY'S Gas-Tight Section HEATERS.

Large Surfaces—all good. No "Steel" or "Sheet Iron" to rust out.

ALL CAST IRON.

No Bolted Joints.
Twenty Sizes.
Portable Masonry.

UZAL CORY & CO.,
210 Water Street, New York.
Established 1847.

Cottage Boiler.

THE H. B. SMITH CO.,

Manufacturers of STEAM AND WATER

Heating Apparatus,

FOR PUBLIC AND PRIVATE RESIDENCES.

SPECIALTIES:

RADIATORS: Union, Royal Union, Champion, Imperial
BOILERS: Mercer, Gold, Cottage, Mills.

ADAPTED FOR STEAM OR WATER.

Salesroom: 133-135 Centre St., N. Y.
Send for Circular. Foundry, Westfield, Mass.

THE METAL WORKER ESSAYS

—ON—

HOUSE HEATING

—BY—

Steam, Hot Water and Hot Air.

With Introduction and Tabular Comparisons.

Second edition, revised. To which has been added a selection from the Letters of Criticism on the Essays as originally published in *The Metal Worker* and a chapter on Proportioning Radiating Surfaces.

"The various subjects treated on are indicated by marginal sub-headings for reference purposes, and the illustrations, computations, &c., are plain and easy of understanding. The book may truthfully be said to be a careful compilation of the best ideas of those best qualified to speak on the subjects treated of, and to form as a whole the very latest and most valuable literature on a topic which is becoming more and more recognized as being of the first importance in the building and furnishing of healthful homes."—*The Building Trades Journal.*

"It constitutes one of the most valuable works on the subject of house heating hitherto published. It is a terse compendium of practical knowledge of all that is most useful on the subject, wholly ignoring an enormous amount of useless speculation upon the subject comprised in numerous volumes and the current literature of the day—written by persons who adopt theories and vainly search for facts to sustain them—not worth the reading. Per contra, the work before us is alike commendable to major-domos who would be well informed on the subject, and to engineers of heating and ventilation, who cannot afford to do without it."—*The Sanitarian.*

"Practical men have contributed of their knowledge in such a way and in such a form as to make the subject interesting as well as highly instructive, and with copious tables and diagrams showing the various methods of piping, &c., the work is unlike any book published. The book treats the subject in a common-sense method and goes directly to the point without any theorizing. It is a valued work and worth the money it costs many times over. It should be read by all devotees of the systems advocated in its pages, as it deals with a subject that is becoming more and more important every year, and one that demands the best thought and the highest skill of every workman."—*Register and Bulletin.*

"It is a practical book. It does not contain rules that depend for their integrity upon one set of conditions, and which may not suit any other condition. The book is for the student, and when studied it will be found surprising how much information it contains that may not appear by a superficial glance or hasty examination."—*Boston Journal of Commerce.*

The work is handsomely presented in a volume of 288 pages in the form of a hand reference book, with many illustrations, showing the several ideas and methods of heating, ventilation and economical arrangement of pipes and radiators, &c. The very complete specifications of materials which accompany several of the essays give a value to the work that will be understood and appreciated by the architect and builder who aim for excellence in this branch of house building."—*The National Builder.*

James Squire, Youngstown, Ohio.—"If we had only had the information contained in this volume in earlier life, we could now have dollars where we only have buttons."

407 pages, 7 x 9½ inches. Handsomely bound in cloth. One volume.

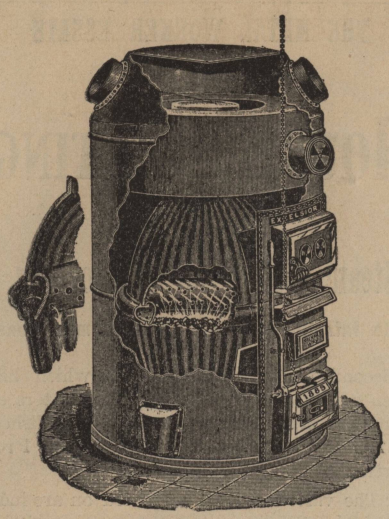
PRICE, $3.00.

Sent Post-paid on receipt of Price by

DAVID WILLIAMS COMPANY,

PUBLISHERS,

232-238 William St., New York.



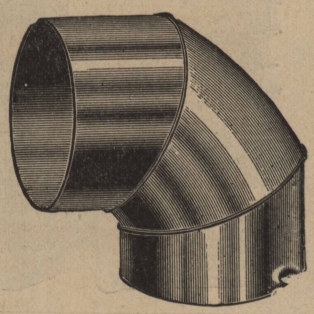
FURNACES AND FITTINGS.

ALL SIZES, ALL KINDS.
IN ENDLESS VARIETY.
FIRST CLASS GOODS
AT ATTRACTIVE PRICES.

THE EXCELSIOR STEEL FURNACE CO.,
38 W. MONROE ST., CHICAGO.

See Page 31 of "Metal Worker" of Sept. 25th for cut of Grates, Radiator and Gas Ring of Furnace shown above.

The Original and only Complete Line



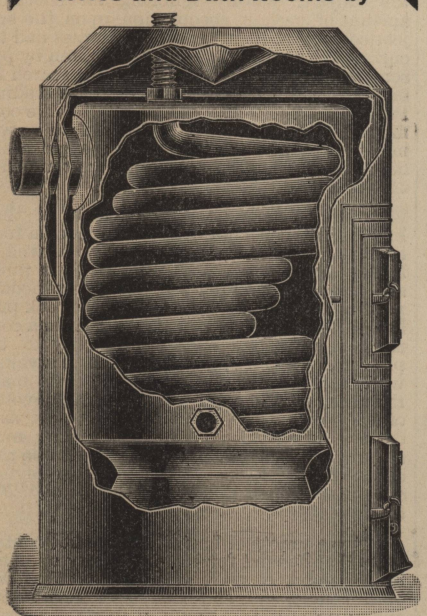
of Furnace Pipes and Fittings.

The Combination Hot Water Heater.

THE BEST THING FOR

HEATING

Houses, Stores Conservatories and Bath Rooms by



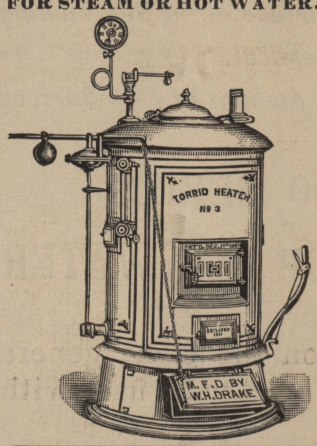
the combination of Hot Air and Hot Water if desired, or Hot Water alone.

SIMPLE, PERFECTLY MADE AND LOW PRICED. . . .

Send for Circulars.

THE NATIONAL PIPE BENDING CO.,
160 River Street,
NEW HAVEN, - CONN.

"TORRID" HEATER.
FOR STEAM OR HOT WATER.



IT IS PRACTICAL IN DESIGN.
IT IS SAFE, BEING TESTED TO 200 POUNDS.
IT IS EASY TO MANAGE AND KEEP CLEAN.
IT IS DURABLE.
IT IS SECTIONAL AND EASILY HANDLED.
IT HAS NO PACKED JOINTS.
IT IS SELF-FEED OR SURFACE BURNING.
IT HAS THE TORRID PATENT ROCKING AND DUMPING GRATE.
IT IS LOW IN PRICE.

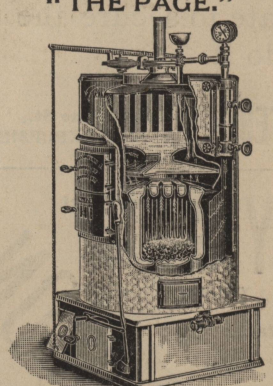
SEND FOR CATALOGUE.

MANUFACTURED BY

W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.

Factory: Hackettstown, N. J.

"THE PAGE."



"Built to Heat."

SPEAKING OF MAN,

Even the "new woman" admits he is "a good thing to have in the house."

SPEAKING OF BOILERS,

The new and up-to-date Steam Fitter must admit that the

"PAGE"

is a "good thing" to have in *any* house. Users say so—*they ought to know.*

WHY NOT CORRESPOND?

W. C. MOWRY, Lock Box 314, Norwich, Conn.

The Ruud Mfg. Co.,

214 Wood Street, PITTSBURG, PA.,

MANUFACTURERS AND GENERAL AGENTS FOR

THE RUUD Instantaneous Automatic Water Heater,
PITTSBURG Water Heater,
RUUD Automatic Distiller.

AN INSTANTANEOUS FLOW OF HOT WATER CONSTANTLY SUPPLIED BY THE RUUD HEATERS.

Pure distilled water is produced by the Ruud Distillers at an insignificant cost of fuel, bringing the process of distillation within the limits of household economy. Low prices, unexcelled workmanship, perfect service. . . . . .

Prices and Detailed Information on Application.

—CHANCES ABOUT EVEN.—Anxious Old Lady—I say, my good man, is this boat going up or down?

Surley Deckhand—Well, she's a leaky old tub, mum, so I shouldn't wonder if she was goin' down; then, again, her bilers ain't none too good, so she might go up!—*Answers.*

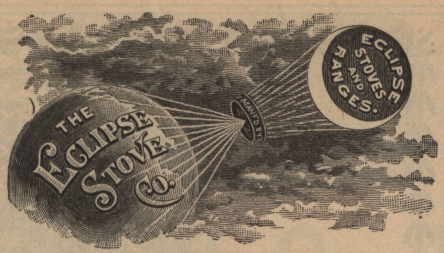
—A PHENOMENON.—"It's remarkable," said Senator Sorghum, "how differently people are affected by the same thing."

"Have you been reading medicine?"

"No. I was thinking of my speech. It kept me awake four nights, and put everybody who heard it to sleep."—*Washington Star.*

TRIUMPH ECLIPSE,

A FIRST CLASS



Steel Range

IN

TWO "SERIES," { "A" Medium Price. "B" Low "

SEVEN SIZES, { 16 x 20, 18 x 20, 20 x 20 16 x 22, 18 x 22, 20 x 22 14 x 18.

ALL STYLES.

Write for Special Steel Range Catalogue No. 14.

THE ECLIPSE STOVE CO.,
MANSFIELD, OHIO.

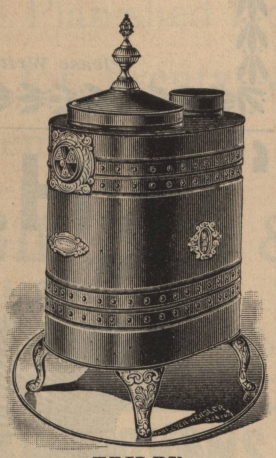
The B. C. Bibb Stove Co.

Air-Tight Wood Stoves

have special features of importance to both the dealer and consumer not to be found on any other make.

Write for descriptive circulars and prices before buying.

WILDFIRE.



TRILBY.

BALTIMORE, MD.

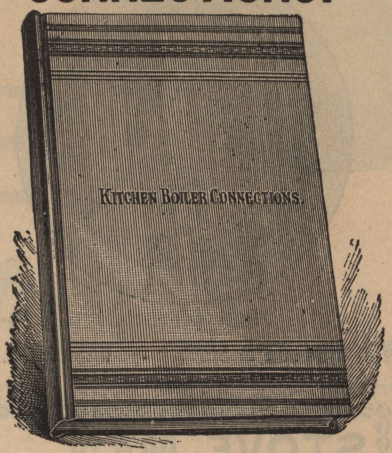
More actual talking points in the Front Rank Furnace than in any other now offered to the trade. For satisfaction—use the Front Rank.

There are more Front Rank Furnaces sold in the City of St. Louis than all the other furnaces combined. Houses with them in stay rented. To rent your house use Front Rank.

Made of heavy wrought steel which cannot crack. A cracked furnace is N. G. To prevent the possibility of having a cracked furnace use the Front Rank.

Made only by FRONT RANK STEEL FURNACE CO., ST. LOUIS.
WRITE FOR CATALOGUE "M."

KITCHEN BOILER CONNECTIONS.



A SELECTION OF

Practical Letters and Articles Relating to Water Backs and Range Boilers.

Compiled from THE METAL WORKER.

71 Illustrations, 8vo, 140 Pages, Cloth.

Price, $1.00.

The publisher of this work is well known for his former successful efforts in the publication of useful and thoroughly practical books for metal workers and steam fitters. The book before us is a model of its kind in judicious compilation, practical instruction, neat illustrations and general typographical appearance.—*The Master Steam Fitter.*

The book is a practical helper to every member of the plumbing trade, who, being alive to his own interests, should embrace this opportunity to obtain the valuable instruction in which the work abounds.—*New England Stove, Hardware and House Furnisher.*

The book is well got up and the information well given. Those interested in works of this character will do well in buying it.—*The Plumber and Decorator.*

Can be considered an authority on the subject to which it relates.—*American Engineering.*

Both interesting and instructive to our trade. It shows how mistakes are apt to arise and how they may be overcome.—*Plumbers' Trade Journal.*

The Metal Worker produces in this volume a number of queries, with answers thereto, which have appeared in that paper. It will be seen that *any plumber who is troubled to make boilers work satisfactorily will here find his troubles alleviated. It contains numerous illustrations and throughout is highly practical from the standpoint of the plumber.* It contains a table of contents and an index.—*Scientific American.*

A well bound, well printed, well illustrated and well edited book. . . The special field of this work is very thoroughly covered. . . Abounding in rare technical information of a practical character.—*American Artisan.*

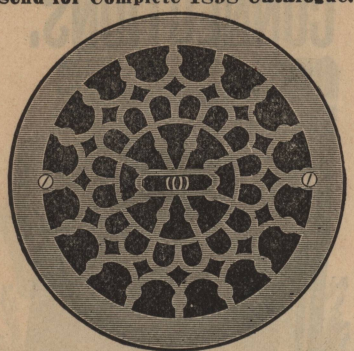
Nearly every problem is illustrated fully and this interesting question of water back connections will be found to be quite fully treated in the volume.—*Domestic Engineering.*

Sent, postpaid, on receipt of price by

DAVID WILLIAMS COMPANY,
PUBLISHERS,
232-238 William Street, NEW YORK.

REGISTERS and VENTILATORS.

Send for Complete 1898 Catalogue.

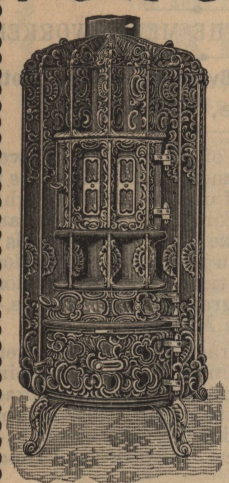


HUB PATTERN.

WM. HIGHTON & SONS, - NASHUA, N. H.

STOVE MEN ATTENTION!

FOR SALE



AT A BIG BARGAIN, The Sectional Stove Co's Patterns and Follow Boards, Also the Patents covering same.

ADDRESS FOR PARTICULARS

Forest City F'd'y & Mfg. Co.

CLEVELAND, O.

Heating, Ventilating, Lighting, Power.

If you contemplate erecting a plant for any of the above purposes, on any scale, from the smallest to the largest or have one now in operation which is not satisfactory, we can aid you at small cost and save you *Time, Worry* and *Money*. "Be sure you are right, then go ahead."

Address for Particulars,

THOMAS E. McNEILL & SON,

122 West 35th Street, N. Y. City.

Supts. and Lecturers, N. Y. Trade School,

Steam, Hot Water, Electricity.

—TEACHER—Who helped you with this essay, James?

Pupil—Nobody, sir.

Teacher—Now, tell me the truth. Did your brother?

Pupil—No, sir; he did it all himself.—*Tit-Bits.*

The Ferrosteel Company,

SOLE MANUFACTURERS OF

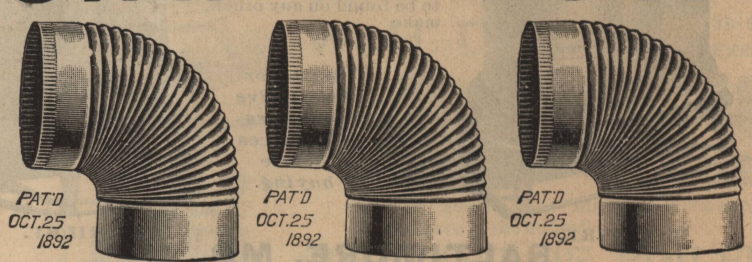
Warm Air Registers made of Ferrosteel.

CLEVELAND, OHIO, 86 & 88 Water Street.

BRANCHES: Boston, Mass., 92 North Street.
Chicago, Ill., 45 & 47 Lake Street.
New York City, 237 Water Street.

Please Write for "Blue Book for the Register Trade."

"O. H." ELBOWS



STRONGEST. HANDSOMEST. BEST.

ALL SIZES 3 TO 7 INCHES.

Common, Galvanized and Planished.

Your **Good** customers want **Good** Elbows—not the cheap, flimsy kind. Be sure to have the **"O. H."** Elbows in stock, so as not to disappoint them. They cost but little more and are a great deal better. Write us for prices.

SOLE M'F'RS:

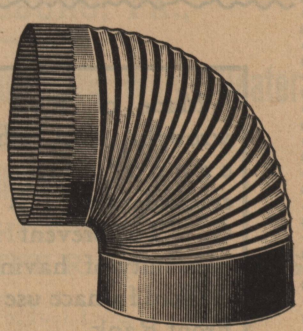
SIDNEY SHEPARD & CO.,

BUFFALO, N. Y.: 145-149 Seneca St.
KANSAS CITY, MO.: 1408-1410 W. 11th St.
DENVER, COL: 1231-1233 Wazee St.
CHICAGO, ILL.: 19-25 Randolph St.
ST LOUIS, MO.: 800 N. 2nd St.
SEATTLE, WASH.: 1313-1315 1st Ave.
NEW YORK SALES AGENT: B. F. SLOAT, 44 Cliff St.

LAWRENCE-LETTS ELBOW CO., Ltd., Waverly, N. Y.

THE MOST PERFECT ELBOW ON THE MARKET

"UNIVERSAL" ONE-PIECE STOVE PIPE ELBOW.

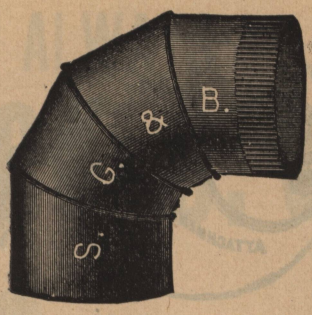


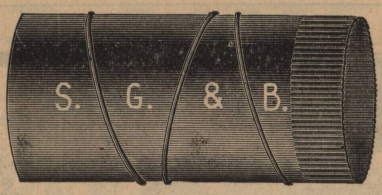
These Elbows are bent into form from one piece of Annealed Sheet Steel, increasing the natural strength of the metal and producing an article strong and durable, and in all ways preferable to the ordinary pieced elbow.

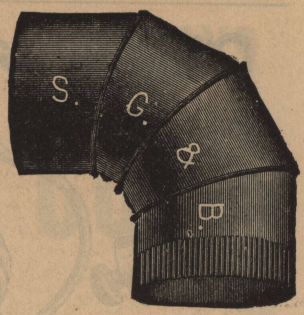
ATTRACTIVE BOTH IN APPEARANCE AND PRICE.

MANUFACTURED BY

THE WINFIELD MAN'F'G CO., · · WARREN, OHIO.







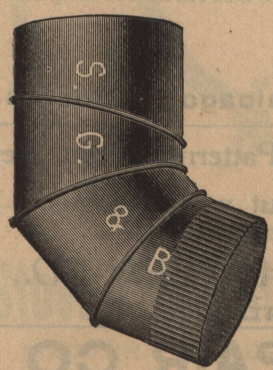
S. G. & B.

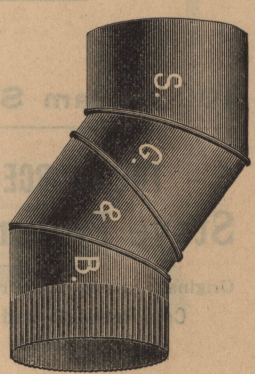
Adjustable Elbows.

The cheapest first-class elbow made. Filling any angle between a straight line and a right angle.

Made in all sizes from 1½ inches to 10 inches in Tin, Charcoal, Galvanized and Planished Iron.

Our patrons for twenty years past are our best friends.





HENRY GIESSEL & CO.,

Sole Manufacturers,

43-45 Franklin St., CHICAGO, ILLS.

BLODGETT'S CELEBRATED PORTABLE OVENS

. . . Improved for 1898.

Seven sizes single, and two sizes double.

For Bakers, Confectioners, Hotels, Japanning, Enameling, Etc.

ONE HUNDRED of these ovens have been bought by the U. S. Government. They were not offered at as low price as some others, but were selected because of their superiority.

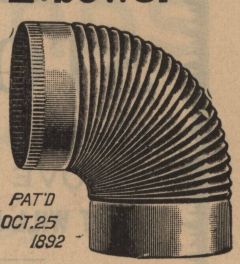
Send for Circular.

The G. S. BLODGETT CO.,
BURLINGTON, VERMONT.

"O. K." One Piece Stove Pipe Elbows.

SOLD BY ALL

Jobbers.



The Lawrence-Letts Elbow Co., Ltd.,
Sole Manufacturers,
WAVERLY, N. Y.

MICA

EUGENE MUNSELL & CO.
MINERS & IMPORTERS
NEW YORK. 218 WATER ST.
CHICAGO. 117 & 119 LAKE ST.

THE **I. X. L. Automatic Beer Pump.**

One month trial free.

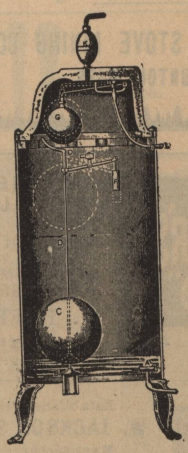
Every Pump Guaranteed for One Year.

Muddy Water Does not affect it.

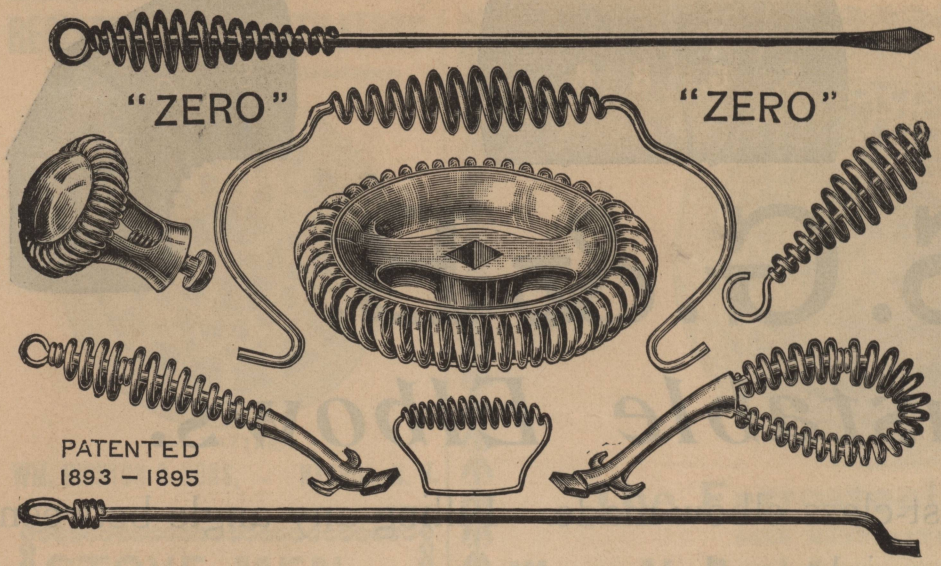
The Simplest, the Most Reliable, and the Speediest Pump on the market.

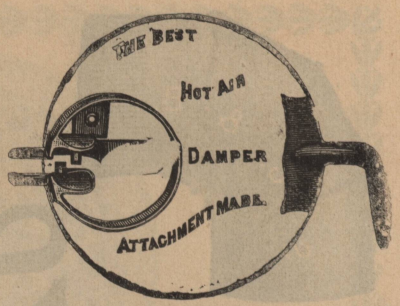
Great *Saving of water rent* under meter system. Will produce 15 pounds air pressure in a 20-gallon air receiver with one stroke of the pump. Send for price, testimonials, and descriptive circular.

Patented Dec. 4, 1894.
Patented Oct. 15, 1895.



THE I. X. L BEER PUMP CO,
Sole Manufacturers.
1015 Christian St., - PHILADELPHIA, PA.
AGENTS WANTED.





"ZERO"
WIRE GOODS.
Manufactured By
W. F. GREENE,
TROY, N. Y.

ASBESTOS FIRE-FELT Non-Conducting Covering
Sheets for Boilers, Removable Sections for Pipes.
H. W. JOHNS M'F'G CO.,
100 William Street, New York. Philadelphia. Chicago. Boston.

THE GEORGE W. COPE
Stove Pattern Works
Original, Artistic and Practical Construction.
Cor. Randolph and Atwater Sts.,
DETROIT, MICH.

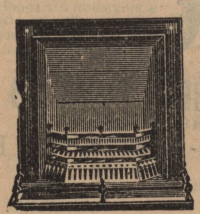
DON'T decide on New Patterns, or the Redressing of Old Ones, without writing to us.
THE GOBEILLE PATTERN CO.,
CLEVELAND.

MARCY STOVE REPAIR CO.,
MANUFACTURERS OF
Range, Stove & Heater Repairs
AND FIRE-BRICK LININGS,
74 Beekman Street, New York.
FOUNDRY, Perth Amboy, N. J.
FIRE-BRICK FACTORY, 36 to 46 South Fourth Street, Brooklyn, L. I
BRANCH STORES:
South Fourth Street, Brooklyn, L. I. 362 Grove Street, Jersey City, N. J.
CATALOGUES NOW READY.

TRY
FIRE
STONE.
THE BEST
STOVE LINING.
IT WILL NOT CLINKER.
Send for Catalogue.
PRESBREY STOVE LINING CO.,
TAUNTON, MASS.

M. D. VALENTINE & BRO CO.
FIRE BRICK
CUPOLA LININGS A SPECIALTY.
WOODBRIDGE. N. J.

THE BAR-KEEPER'S "FRIEND"
SAMPLES SENT FREE.
ONCE TRIED, ALWAYS USED.
THE ONLY METAL POLISH POSITIVELY FREE FROM ACID OR GRIT.
G. W. HOFFMAN,
297 E. Washington St.,
INDIANAPOLIS, IND.

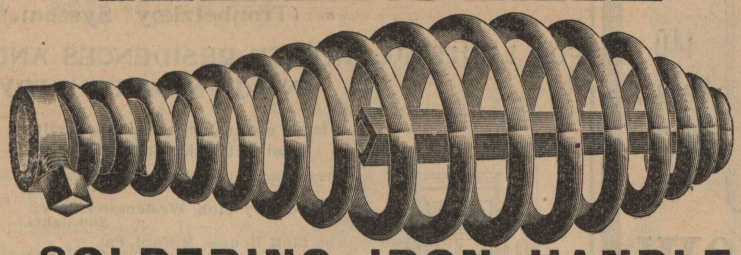


Established, 1827.
W. JACKSON'S SON,
Manufacturer and Importer of
Grates, Open Fire Places, Fenders, Fire Irons, Andirons, Tiles, &c.
Office and showroom, 246 Front Street, within three minutes of Fulton Ferry. Factory, 268 Water Street, New York.

ARTISTIC
PATTERNS
FOR
STOVES,
FURNACES,
HOT WATER & STEAM HEATERS
VEDDER PATTERN WORKS
ROBERT GALBRAITH MECHANICAL EXPERT
TROY, N.Y.

L. O. KOVEN & BROTHER,
MANUFACTURERS OF
Galvanized and Plain
Iron Boilers
of any size, with Copper or Iron Pipe Coils inside. Also
GALVANIZED RANGE BOILERS and EXPANSION TANKS.
... OFFICE ...
18 SPRUCE ST., NEW YORK.

ALWAYS COLD. ALASKA ALWAYS COLD.



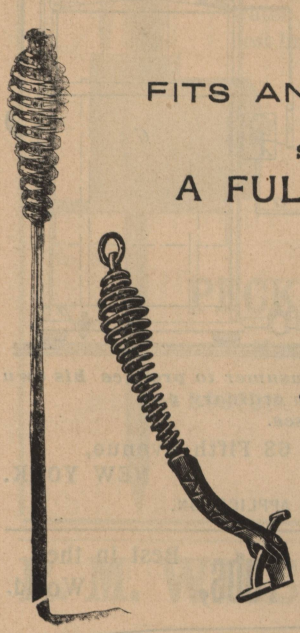
SOLDERING IRON HANDLE.

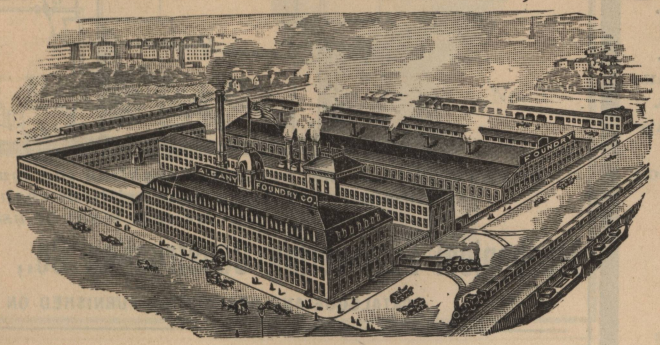
FITS ANY IRON. WANT TO SEE ONE?

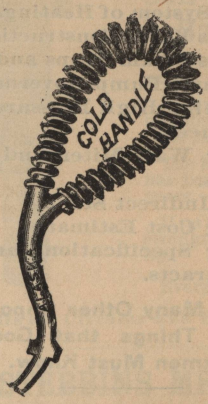
SEND US 25c. AND WE WILL MAIL YOU A SAMPLE.

Sold by all Jobbers in Hardware or Plumbing.

A FULL LINE OF STOVE KNOBS, HARDWARE, ETC.







MADE ONLY BY

Troy Nickel Works, Albany, N. Y.

PATENT

Stove Truck and Carrier

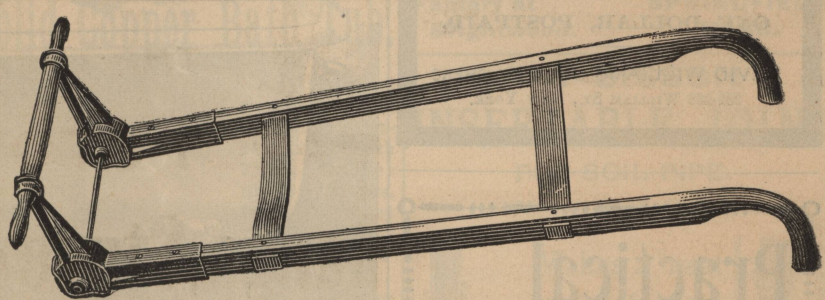
MADE IN THE BEST MANNER.

Manufactured by

C. S. MERSICK & CO.,

NEW HAVEN, CONN.

Handled by all Leading Jobbers. Send for Price.



STOVE BOARDS

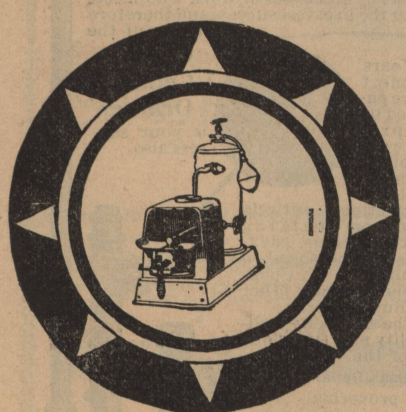
Manufactured by

COOPER & McKEE,

Successors to

John J. Sweeney,

119 Gwinnett St., Brooklyn, New York.



ALWAYS READY—A

GEM

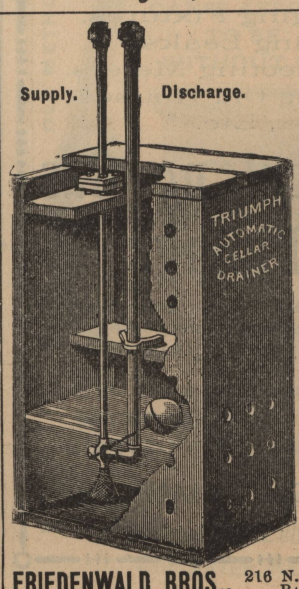
SOLDERING FURNACE

NO SMOKE,
NO ODOR,
NO NOISE,
UNEXCELLED,
UNEQUALLED,
UNRIVALLED,
SAFE, SURE,
DURABLE.

Made only by

BURGESS SOLDERING F'CE CO.,

COLUMBUS, O.



A SURE CURE FOR

Wet Cellars

THE

Triumph Automatic Cellar Drainer

For draining cellars, excavations, furnace pits, &c. Write for circular, price-list and gilt edge testimonials. Correspondence solicited. Please mention this paper.

FRIEDENWALD BROS., 216 N. Holliday Street, BALTIMORE, MD.

The Donoghue Soldering Copper Handle is a good Handle. **TESTED TEN YEARS.**

Made by The Cleveland Rule & Handle Co.,

CLEVELAND, O.

By Thos. McNeil

THE STEAM AND HOT WATER FITTERS' TEXT BOOK.

140 Pages. Cloth.

TELLS HOW

To Estimate Radiation.
To Plan a Hot Water Job.
Size of Flow and Return Pipes.
One and Two Pipe Steam Work.
Heating with Exhaust Steam.
Blower System of Heating.
Explains Valve Construction.
Explains Steam Traps and Automatic Pump Governors.
Connecting High Pressure Appliances.
Making Wall Miter and Box Coils.
Size of Indirect Stacks.
Making Cost Estimates.
Making Specifications and Contracts.

And Many Other Important Things that Good Workmen Must Know.

ILLUSTRATED.

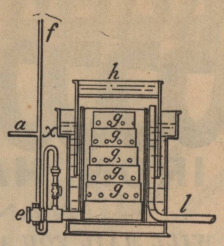
ONE DOLLAR, POSTPAID.

DAVID WILLIAMS CO., PUBLISHERS
232-238 WILLIAM ST., NEW YORK.

ACETYLENE GAS.

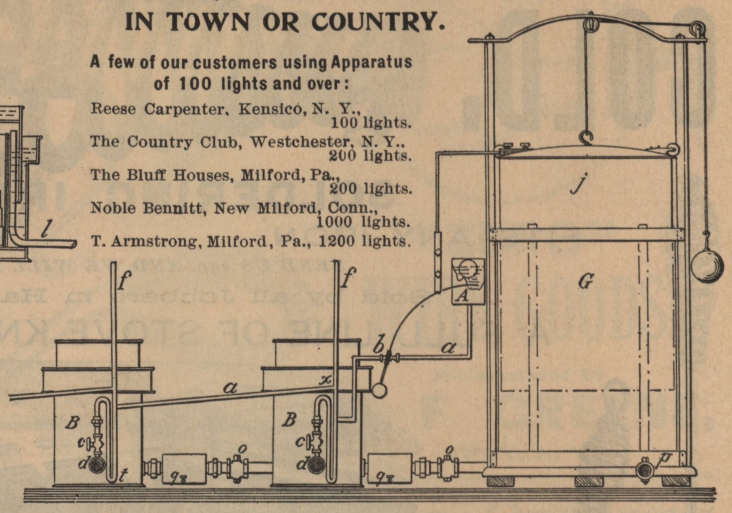
(Troubetzkoy System.)

FOR LIGHTING PRIVATE RESIDENCES AND PUBLIC BUILDINGS IN TOWN OR COUNTRY.



A few of our customers using Apparatus of 100 lights and over:

Reese Carpenter, Kensico, N. Y., 100 lights.
The Country Club, Westchester, N. Y., 200 lights.
The Bluff Houses, Milford, Pa., 200 lights.
Noble Bennitt, New Milford, Conn., 1000 lights.
T. Armstrong, Milford, Pa., 1200 lights.



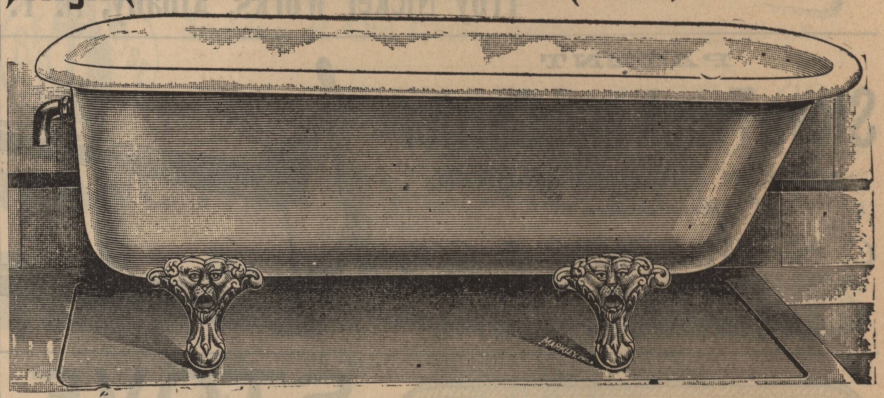
GUARANTEED perfected apparatus enabling the consumer to produce his own illuminant, 14 times more brilliant than ordinary gas, and pay for only what he uses.

Mechanical Engineering Construction Co., 63 Fifth Avenue, NEW YORK.

CATALOGUE AND DESCRIPTION FURNISHED ON APPLICATION.

Maryland Porcelain Enameled Bath Tubs,

Best in the World.



MARYLAND FOUNDRY CO., - - Baltimore, Md.

Practical Gas Fitting.

CONCISE—THOROUGH.

Describes best methods of doing gas fitting.

The Sizes of Pipes.
How to Run Them.
The Tools Required.
How to Make a Test.
Hanging Fixtures.
Finding Leaks.
Connecting Meters.
Piping Old Houses.
Etc., Etc.

Acetylene Gas Piping.

A practical book of instruction on piping for those who are using or selling Acetylene Gas Generators.

116 PAGES, CLOTH BOUND
54 ILLUSTRATIONS.

ONE DOLLAR, POSTPAID.

DAVID WILLIAMS CO.,
232-238 William Street, - NEW YORK.

Modern Plumbing

Is replete with situations difficult to master with

METHODS

of the olden time. Modern conveniences and the rigid rules of sanitary science demand

ADVANCED IDEAS

in the Plumbing art.

TEMPLE BACK VENT FITTINGS

are in accord with the progress of to-day. Experienced men say they are rational and profitable and back up their assertions by using them in their practice. It will pay you to investigate. Ask your jobber for our circular—

"Pointers on Roughing In."

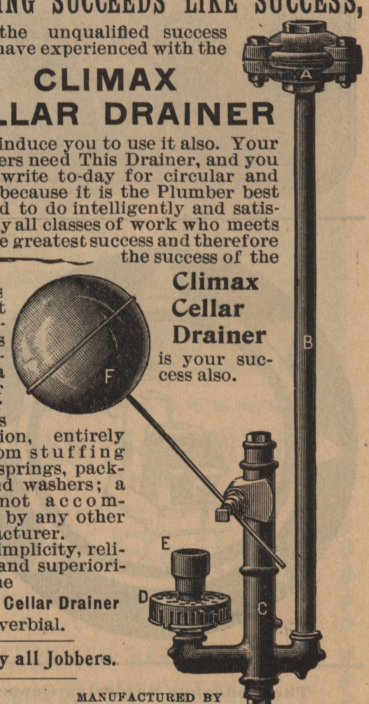
THE SCHLEMMER COMPANY,
CINCINNATI, O.
NEW YORK, N. Y.

NOTHING SUCCEEDS LIKE SUCCESS,

hence the unqualified success others have experienced with the

CLIMAX CELLAR DRAINER

should induce you to use it also. Your customers need This Drainer, and you should write to-day for circular and prices, because it is the Plumber best qualified to do intelligently and satisfactorily all classes of work who meets with the greatest success and therefore the success of the



Climax Cellar Drainer is your success also.

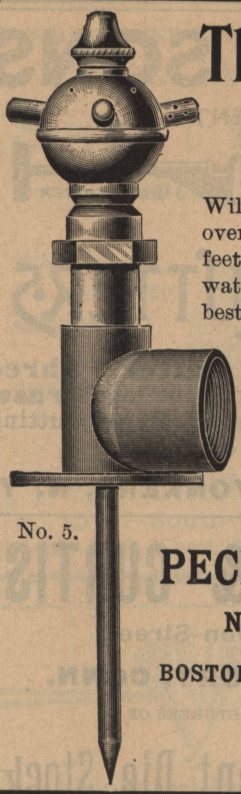
Years of effort have enabled us to produce a Drainer of marvelous perfection, entirely free from stuffing boxes, springs, packings and washers; a result not accomplished by any other manufacturer.

The simplicity, reliability and superiority of the Climax Cellar Drainer are proverbial.

Sold by all Jobbers.

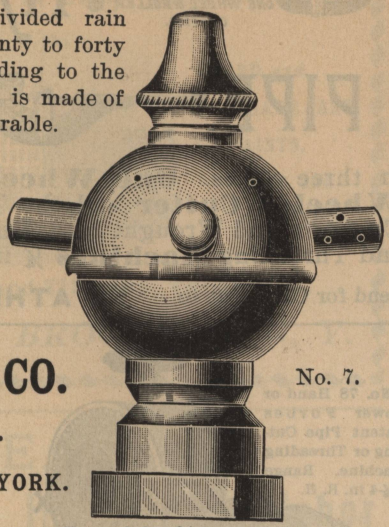
MANUFACTURED BY

C. M. KEMP MFG. CO.
BALTIMORE.



The DEWDROP LAWN SPRINKLER

Will throw a finely divided rain over an area from twenty to forty feet in diameter, according to the water pressure used. It is made of best brass and is very durable.



No. 5.

No. 7.

PECK BROS. & CO.

New Haven, Conn.

BOSTON. NEW YORK.

Tapped for ⅜ in. iron pipe.

New Style.

LOW DOWN PATENTED IMPROVED

Broughton Self-Closing Basin Cock.

No exposed working parts.

Every intelligent plumber will appreciate this.

The Broughton work has been in use many years.

Unsurpassed for strength and durability.

Every one warranted.

Write for Circular and Price-List.

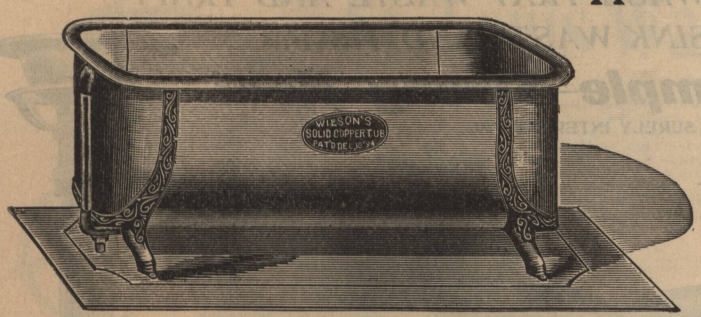
E. STEBBINS MFG. CO.,

Factory at Brightwood. SPRINGFIELD MASS.

R. M. WILSON MFG. CO., ROME, N.Y.,

MANUFACTURERS OF THE

Wilson Double Seamed Solid Copper Bath Tub.



THE MOST SANITARY TUB IN EXISTENCE.

Also the largest manufacturers in the world of Copper Lined Bath Tubs, Copper Range Boilers, Water Closet Tanks and Seats and Plumbers' Brass Work, &c.

Ask your dealer for prices. Send for Catalog descriptive of our specialties.

BOOTH'S DUPLEX BATHS.

Best Sheet Metal Baths in the Market.

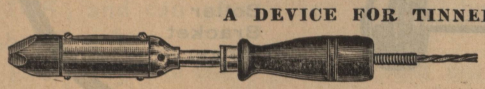
Correspondence Solicited

STEEL BATH MFG. CO.,

DETROIT, MICH.

ELECTRICAL SOLDERING IRONS.

A DEVICE FOR TINNERS' USE.



NO. 30.

Heavy enough for any ordinary work. Not too heavy for use on light work.

This size especially adapted for Tinners' work.

NO. 31.

Write for circular—it will interest you.

AMERICAN ELECTRICAL HEATER CO., - DETROIT, MICH.

The SISSON INSERTABLE JOINT

FOR SOIL PIPE.

SIZES 2 TO 6 INCHES.

Makes a neat job and saves your patience.

SEND FOR DESCRIPTIVE CIRCULAR FREE.

YOU CAN'T AFFORD TO BE WITHOUT IT.

This does the trick.

SISSON & CURRIER,

708 STATE MUTUAL BUILDING,

WORCESTER, MASS.

—THE—

KELLY SHOWER BATH RING

Patented April 30, 1895.

It Will Produce Better Results Than a $100 Shower Bath.

For particulars write

Thos. Kelly & Bros.

Manufacturers of Permanent Plumbing Goods

201 Madison St., CHICAGO.

COLWELL LEAD CO.,

63 Centre Street, New York.

Manufacturers of

LEAD PIPE, SHEET LEAD, SHOT,

And Sellers of

Everything You Want for Plumbing.

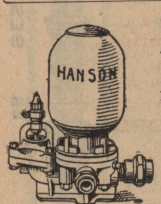
Leather and Rubber

WASHERS,

Machine cut, at less price than can be cut by hand. Send sample for prices

I. G. MARSTON & CO.,

200 Ruggles St., Boston, Mass.



HYDRAULIC RAMS.

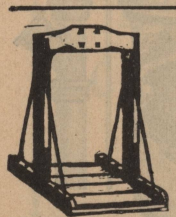
The most efficient ram in the market, for the price.

Send for Circular.

F. B. HANSON,

175 Centre St.,

NEW YORK.



Hand Elevators and Dumbwaiters

made to be sold by the Hardware trade. Can be placed in position by any carpenter. Catalogue free.

ENERGY MFG. CO.,

410 Cherry St., Phila., Pa.

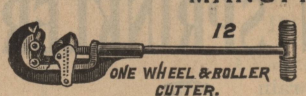
—DEEPLY CONCERNED.—Mrs. Plimley—Oh, dear, I'm so nervous over this war that I'm unable to sleep nights.

Mrs. Dahlgren—Why, you haven't any near relatives or dear friends in the army or on the ships, have you?

Mrs. Plimley—No, but I'm planning to get up a trolley party on the Fourth of July, and I'm afraid if the trouble continues it'll be hard to get enough men to make the thing a success.—*Ex.*

D. SAUNDERS' SONS

MANUFACTURERS OF PATENT



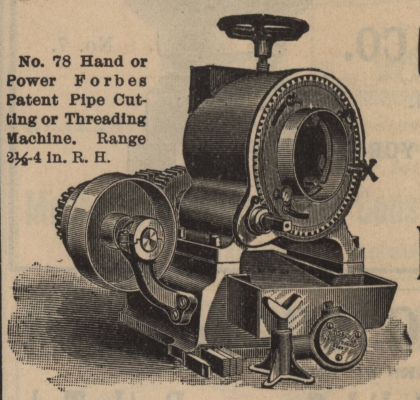
HAND

PIPE

CUTTERS

in three styles. **One Wheel and Roller Cutter. Three Wheeled Cutter** and the **Tool Cutter,** for cutting **Brass, Copper** and Wrought Iron **Tubes.** Also mfrs. of **Pipe** Cutting and Threading **Machines** ¼ in. to 18 in., Hand or Power.

Send for Catalogue to **27 ATHERTON ST., YONKERS, N. Y.**



No. 78 Hand or Power Forbes Patent Pipe Cutting or Threading Machine. Range 2¼-4 in. R. H.

CURTIS & CURTIS,

56 Garden Street,

BRIDGEPORT, CONN.

MANUFACTURERS OF

Forbes Patent Die Stock.

Portable, Simple, Inexpensive.

SEND FOR ILLUSTRATED CATALOGUE.

BOSTON WASH TRAY WASTE AND TRAP.

BOSTON SINK WASTE AND TRAP.

Simple—Strong—Neat.

THE PRICE WILL SURELY INTEREST YOU.

CRAWFORD AND **YOUNG,**

224 Franklin St.,

BOSTON,

Manufacturers and Dealers in

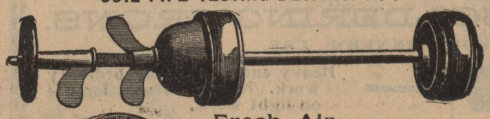
Plumbing Materials

AND

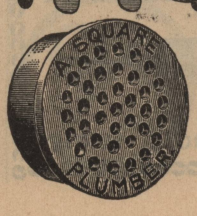
Sanitary Supplies.

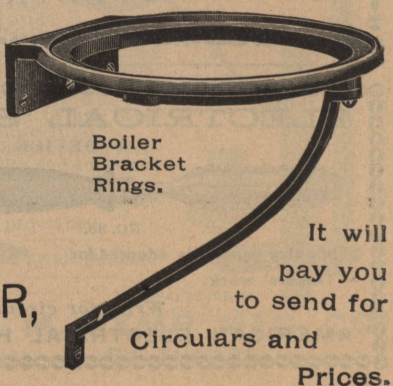
Desper's Plumbers' Specialties.

MAKE WATER TESTS BY DESPER'S SOIL PIPE TESTING DEVICES. . . .



Fresh Air Inlet Guards.





Boiler Bracket Rings.

It will pay you to send for Circulars and Prices.

H. A. DESPER,

MANUFACTURER,

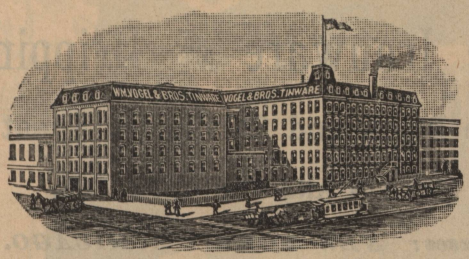
Worcester, Mass.

WILLIAM VOGEL & BROTHERS,

SHEET METAL SPECIALTIES,

STAMPING AND PRESS WORK IN EVERY VARIETY.

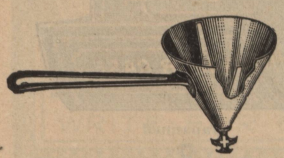
PLAIN and DECORATED SEAMLESS BOXES for OINTMENTS, BLACKING, &c.



ROUND and SQUARE CANS for PAINTS, OILS and VARNISHES.

OILERS, SHEET-METAL SCREWS and TINNERS' TRIMMINGS.

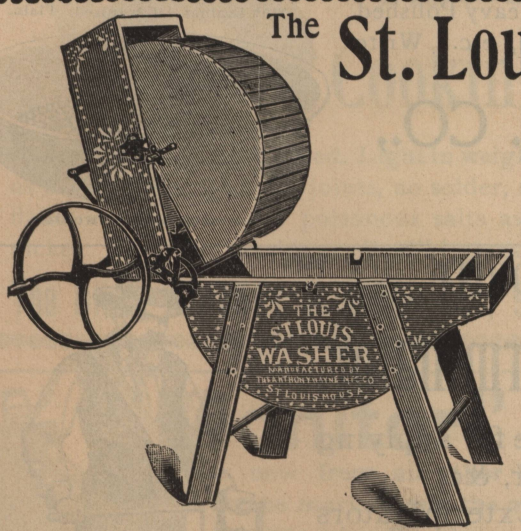
87 to 47 South 9th St., 433-435 Kent Ave., } *BROOKLYN, N. Y.*



SEAVEY'S Seamless Ice Cream Disher.

Made of Heavy Steel, Pure Tin Plated, with German Silver Knives. Correct Measure.
No. to a Quart, 16, 12, 10, 8, 6, 5, 4.
Write for price-list and special discount.

SEAVEY MFG. CO., Manufacturers of Plain, Stamped and Japanned Tinware,
NOS. 120 AND 122 NORTH STREET, BOSTON, MASS.

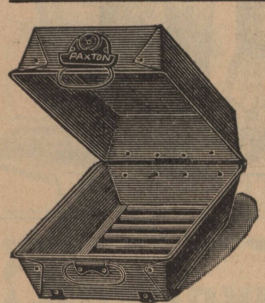


The St. Louis Washer

is made on the reciprocating principle, the two cylinders in the machine working in opposite directions, thereby rubbing the clothes between them the same as is done by hand on a washboard. We warrant the machine to do good work, not to tear the clothes, and to work so easy that a child can do a washing without fatigue.

For price and directions apply to the

Anthony Wayne Mfg. Co.,
Fort Wayne, Ind., or St. Louis, Mo.



Roasters and Bakers.

The demand for these goods, without which no kitchen is complete, is increasing each year. We are in a position to fill all orders promptly, and carry a full stock of these goods in Planished Iron, Refined Iron and Sheet Steel.

We have had ten years' experience in making Roasters. We carry the largest variety of Roasters of any factory in the U. S., and can please any and all buyers as to quality, material, finish, price, &c.

Every buyer of these goods should not fail to consult us before placing fall and winter orders.

This is an age of specialists. We are Roaster specialists.

If you sell Roasters, write us, and we will give you some information which may save you some money.

PAXTON HARDWARE MFG. CO., Paxton, Ills.

Art of Coppersmithing.

A Practical Treatise on Working Sheet Copper in all Forms.

By JOHN FULLER, Sr.

327 Pages, 474 Illustrations, 7 x 10 Inches, Cloth. Price, $3.00.

This work, prepared at great labor and expense, is reproduced from *The Metal Worker*, and forms an exhaustive treatise on the Coppersmiths' Art, being the only volume on that subject that has been published. It is beautifully illustrated with 474 pen and ink drawings, and is bound and printed in the best manner.

CONTENTS:

Historical Sketch of Copper; Braziers' Art, or Light Coppersmithing; First Year's Experience; Repairing and Tinning; The Boy's Second Year; Making Washing Coppers; Making Small Brewing Coppers; Table of Dimensions and Capacity; Making Hand Bowls; Making Frying Pans; Making Closet Pans; Making Water Balls; Mounting for Copper Goods; Glue Pots and Tea Kettles; Oval Tea Kettles; Beer Mullers; Funnels; Coffee Pots; Saucepans and Pudding Pots; Stewpans; Stock Pots; Fish Kettles; Brazing Pans; Tea Boilers; Warming Pans; Preserving Pans; Dripping Pans; Coal Scoops and Coal Hods; Making Coal Scoops; Planishing and Smoothing; Cranes or Syphons; Pumps; Appliances of Railway and Marine Coppersmiths; Making Copper Pipe; Piecing and Joining Pipes; The Fire Pots; Fire Pot Set for Brazing Joint; Soft Soldering Large Joints; Taking Templates; Filling and Bending; Making Bends; Template Boards; Patching Pipes; Outlets; Expansion Joints; Tee Pieces; Three-way Pieces; Cross or Four-way Pieces; Saddle Fire; Marine Work; View of Maudsley, Sons & Field's Shop; Making Large Bends; Making Double Bends; Brazing on Flanges; Short Bends; Air Pipes for Ships; Making Hollow Spheres; Brazing Sheet Brass; Locomotive Brass Work; Brass Dome Covers; Heavy Pipes for Breweries; Brewing Coppers or Kettles; Dome Coppers; Dome and Pan Coppers; Tallow Coppers; Dyers' Coppers; Sugar Tieches; Stills.

Sent post-paid upon receipt of price.

DAVID WILLIAMS CO., Publishers,
232-238 William St., New York.

St. Louis Stamping Co.,

ST. LOUIS, MO.

—MANUFACTURERS—

Granite Ironware and Dripping Pans.

Fine Black and Galvanized Sheet Iron.

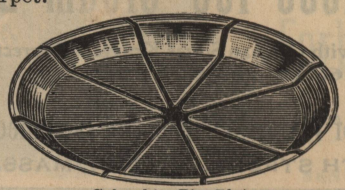
TIN AND TERNE PLATES.

Branch Houses: NEW YORK. CHICAGO. BOSTON.

"PRINCESS" CHILD'S TRAY.

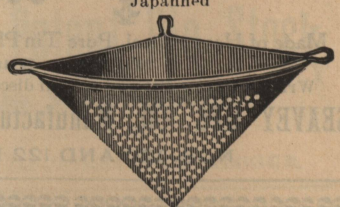
Japanned.

The only Child's Tray that fully protects. Fitted closely around body of child with high projection in front. It gives perfect protection to the child and prevents soiling of table cloth or carpet.

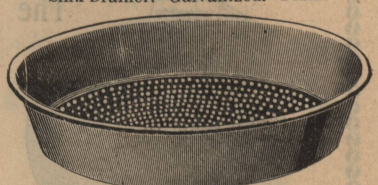


Columbia Pie Plate.

Japanned



Sink Drainer. Galvanized. Plain.



Champion Sieves. Two Sizes.

Here are just a few specimens of our full line of Pieced, Heavy Polished Stamped and Japanned Tinwares, Galvanized Ware, etc. Write us for catalogue and prices.

KEEN & HAGERTY MFG. CO.,

BALTIMORE, MD.

Office and Salesroom, 16 W. BALTIMORE STREET.

FARMER'S FAVORITE

Potato Bug Exterminator.

The best machine made for applying poison mixed with plaster, &c.

Thousands of these Exterminators have been in use for years and have given entire satisfaction.

PRICE REDUCED.

PARKS & PARKS, Manufacturers,

TROY. N. Y.

"Half the Selling is in the Showing."

50% more sales can be made by many Hardware Stores if goods are effectively displayed. THE AMERICAN HARDWARE STORE contains 450 pages and 500 illustrations and describes methods employed by the most successful dealers.

PRICE, THREE DOLLARS.

DAVID WILLIAMS COMPANY, Publishers,
232-238 William St., N. Y.

A VICTORIOUS LINE

Granite Steel Ware

NEW GRANITE STEEL WARE CATALOGUE JUST OUT WRITE FOR ONE.

KIECKHEFER BROS. CO. MILWAUKEE.

"Aluminoid" Cooking Utensils

Highest quality produced. Light in weight. Hard as steel. Bright as silver. No seams, no joints, no solder, no enamel or plating to flake or wear off. No poisonous salts as from tin, copper and nickel. Send for catalogue; it will interest you. Made only by

The HILL, WHITNEY & WOOD CO., 90 Canal St., Boston.

HIGH GRADE ENAMEL WARE

Double Coated and Absolutely Pure.

"AGATE NICKEL STEEL WARE."

AGATE NICKEL-STEEL-WARE I. & G. MFG. Co.

This Trade Mark on bottom of each article.

Contains no Arsenic, Antimony, Lead or other poisonous ingredients.

Others may claim Purity. We alone substantiate it by chemist's certificate attached to each article.

"We have made a critical examination of the products of nearly a score of the manufacturers of such goods, and the only articles of the kind found to be absolutely free from all the dangerous contaminations of which mention has been made are those known as 'Agate Nickel-Steel Ware.' The makers of this ware possess an exclusive patented process by which, through the intervention of a coating of nickel, the impervious or enamel coating is caused to adhere to the steel, thereby doing away with the necessity of a lead bath or the employment of antimonial or arsenical preparations to achieve such results."—C. H. Brace, M. D., in American Journal of Health.

For sale by all reputable dealers. Write for free booklet containing startling information about Enameled Cooking Utensils.

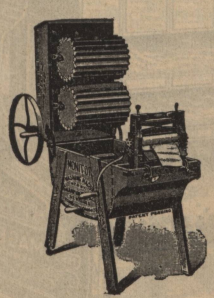
LALANCE & GROSJEAN MFG. CO.,
NEW YORK. CHICAGO. BOSTON.

"Monitor" Washer

Is new from all other Washers on the market, and the most perfect Washing Machine ever made.

Water can be heated in the machine by placing underneath machine a small gas or oil stove. Will wash twelve shirts at a time, in ten minutes, or other garments equal in quantity. It can be operated by hand or power.

Write for prices and secure agency.



CHAMPION WASHING MACHINE CO.,
312 W. Pearl Street, Cincinnati, Ohio.

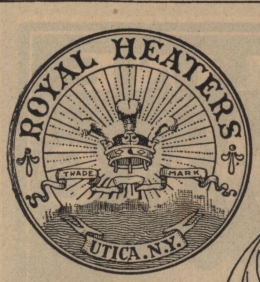
SPERRY'S HOLLOW-WARE....

Is original in shape and finish. A little better and unlike the rest. Spiders and Griddles particularly nice. Not so high-priced either.

Not sold by Jobbers.
Write us.

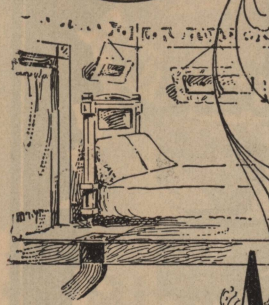
D. R. SPERRY & CO.,
HOLLOW-WARE FOUNDERS,
BATAVIA, ILL.

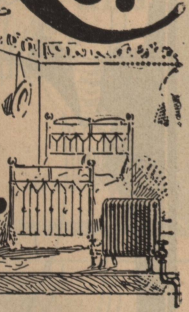
—The Boy—Oh, ma! the elephant is going to die. I gave him a cherry, and he swallowed the stone!



HART & CROUSE CO.

Royal Heaters.

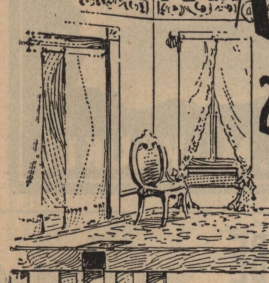


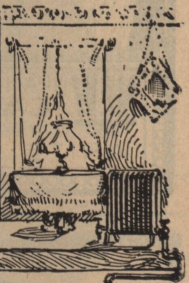


ALL KINDS OF HEATING APPARATUS.

235 WATER ST., NEW YORK. UTICA, N.Y.

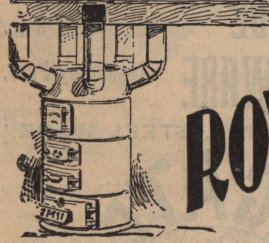
79 LAKE ST., CHICAGO. COLUMBUS, O. ST. LOUIS, MO.

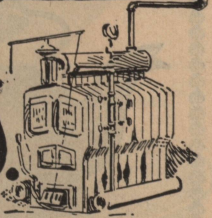




ROYAL HEATERS LEAD ALL OTHERS.

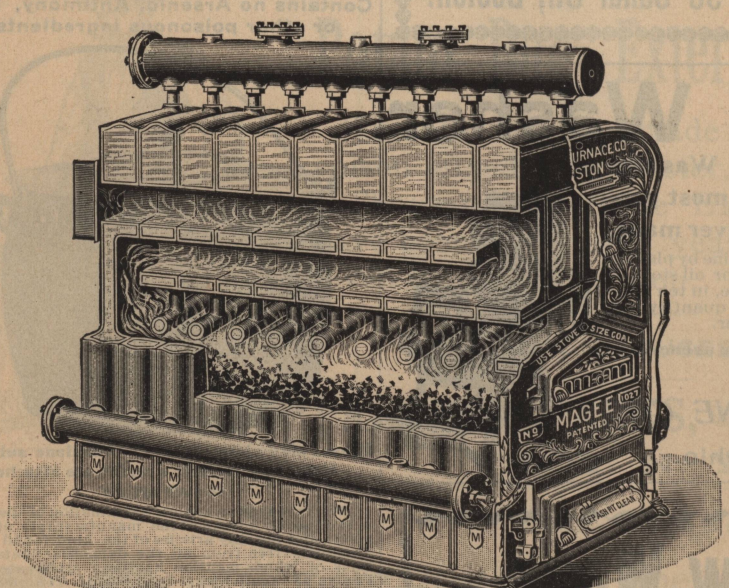
SOLD ON THEIR MERITS, NOT ON THEIR ANTIQUITY.





STYLE MAKES TRADE QUALITY HOLDS IT . . .

BOTH style and quality of construction considered, the best proposition now presented in the heating world is offered in the . . . .



Magee HEATERS

In perfecting "Magee" Heaters there have been constantly in view provisions for the best combustion, and utmost direct fire-surface—that within the combustion chamber—together with the freest circulation of the water.

We appeal to you because
We have what you want.

Series 22-98	For Steam	For Water	Series 27-98	For Steam	For Water
5 sizes.	400 to 1,000 ft.	650 to 1,650 ft	6 sizes	1,250 to 2,250 ft.	2,000 to 3,600 ft.

For discounts and other information, apply to

MAGEE FURNACE CO.,

32-38 Union Street, Boston.
86 Lake Street, Chicago.
27 New Montgomery St., San Francisco.

Remember that name, "MAGEE," and that we make a full line of Ranges, Furnaces and Combination Heaters—all fully warranted.

THE METAL WORKER.

NEW YORK AND CHICAGO.

Saturday, July 2, 1898.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

BUSINESS OFFICES:

NEW YORK.....232-238 William Street.
PHILADELPHIA.....117-119 South Fourth Street.
BOSTON.....33 Mason Building.
PITTSBURGH..... Room 509 Hamilton Building.
CHICAGO.....59 Dearborn Street, cor. Randolph.
CINCINNATI..... .....Rooms 22-24 Pickering Building.
ST. LOUIS.....Commercial Building.
CLEVELAND..... .....312 The Cuyahoga.

BRITISH AGENCY: The Ironmonger, 42 Cannon Street, London, England.

Volume L. .....No. 1.
Index to Reading Matter.....Page 63.

Our Tin Plate List.

We take pleasure in calling the attention of our readers to *The Metal Worker* lists of American tin plate works and brands printed in this issue. For four years past these lists have been the standard register of the American tin plate industry, furnishing to the trade at large accurate and valuable information which is obtainable from no other source. They are most carefully prepared and corrected up to date at the end of each quarter from statistics and information furnished to this paper by the manufacturers and dealers throughout the country. That their reliability and worth are recognized by the entire trade is proved by numerous and gratifying expressions of approval received from time to time and by the large demand for the issues of *The Metal Worker* in which they appear. In this connection we would urge those who desire to possess extra copies of the present lists to send in their orders as soon as possible. Judging from former experiences the entire edition is apt to be exhausted at an early date.

Profitable Philanthropy.

About a year ago D. O. Mills, the well-known capitalist, built and opened up a model poor man's hotel in Bleecker street, New York, at a cost of a little over $1,000,000. The enterprise, which was undertaken by Mr. Mills primarily as an attempt to solve the question of better housing for the respectable class of small salaried workingmen, has turned out a profitable speculation from a business standpoint. The huge and costly "Mills Hotel No. 1," popularly known as "the Waldorf of Bleecker street," has been the completest kind of a success from the start. From the time of its opening the 1554 bedrooms have been occupied nightly and hundreds of lodgers have been turned away for lack of accommodation. The restaurant attached to the hotel has fed some 3000 persons each day, with meals averaging 10 cents in cost, and the ten stores in the basement of the building have yielded a steady rental. Although the actual figures have not been published, it is estimated that the rents received for the rooms have averaged $2100 a week, or $109,200 a year, while the restaurant has yielded an average weekly profit of about $500, or $26,000 for the year. Adding $3120 for the rental of the stores, the total income of the hotel on the most conservative estimate for the year is shown to have been about $138,320. The estimated expenses are: Taxes on $500,000 assessment, $10,700; repairs, $500; incidentals, $500; gas and electric lighting, $7000; 150 employees, at an average of $9 a week, $72,000; water tax, $1500. Total, $92,200, leaving a net profit of $46,120 on an outlay of $1,000,000, or a safe 4½ per cent. investment, at the lowest computation. This is a very satisfactory showing and should do much to encourage the establishment of similar institutions in New York and other cities. London already has a number of such poor man's hotels, started several years ago by a company of philanthropic capitalists under the management of Lord Rowton, each one of which has proved a pronounced financial success. The benefits conferred upon the masses by the provision of clean, comfortable and hygienic dwelling places at a cheap cost is incalculable. Mr. Mills has lately completed a lodging house for families on the same plan in the rear of his hotel, in which he charges $8.50 a month for a suite of three rooms and offices, and the building promises to be always full. He is also building a "Mills Hotel No. 2," about half the size of No. 1, on the east side of New York.

The Building Situation.

Extended correspondence during the past month regarding the volume of building in the large cities of the country has elicited the fact that conditions are more nearly normal than is generally believed among the builders themselves. While none of the large cities report unusual activity in building, there is a fair amount of work actually under way nearly everywhere. Excessive competition seems to be one of the features of the situation which has given contractors a tendency to complain, and this, together with the fact that some projected work has been withheld or postponed on account of the war, has caused a feeling of depression which does not seem warranted from the work on hand. It appears to be a safe statement that the average of work done this year will be about the same as that of 1897, but it will fall below the amount confidently expected before the season opened and before war was declared. As indicating the building situation in the Greater New York it may be interesting to refer to some of the figures contained in the report of the Department of Buildings, made public a few days ago. The report covers the operations during the three months ending March 31 of the present year, and shows 946 buildings to have been projected in the boroughs of Manhattan and Bronx, at an estimated cost of $21,495,430. In Brooklyn there were 911 buildings projected, estimated to cost $3,791,058; in Richmond there were 36 buildings, estimated to cost $82,398, and in Queens 16 structures, to cost $45,600, making a total for the Greater New York of 1909 buildings, involving an estimated expenditure of $25,414,486. In the boroughs of Manhattan and Bronx 586 buildings were commenced and 624 completed during the period named. In the classification

of the plans and specifications for new buildings filed and acted upon by the department, 305 were for dwelling houses, 377 were for flat houses, 171 were for tenement houses, 56 were for stores, 15 for office buildings, 52 for manufactories and workshops, 7 for hotels and boarding houses, 4 for school houses, 6 for churches, 13 for public buildings, places of amusement, &c., 28 for stables and 675 for frame structures.

Wireless Telegraphy.

According to Professor Sylvanus P. Thompson of England, one of the greatest living electrical authorities, the commercial use of wireless telegraphy, while a strong probability of the future, is likely to take a long time for its full development. In an address recently delivered before the London Society of Arts Professor Thompson stated that Lodge, employing the electrical waves discovered by Hertz, was the first to send messages across intervening space without the use of connecting wires, the distance covered being several hundred yards. Later, Marconi, with the aid of the British telegraph department, sent messages across the water between two points on the west coast of England, a distance of 9 miles, and subsequently, over the open sea, at Spezia, Italy, he maintained communication between points 11 miles apart. Still more recently Professor Slaby signaled across an open stretch of country from Rangsdorf to Schonburg, in Germany, a distance of over 13 miles. All the experiments indicated that it is easier to transmit messages without wires over the sea than over land, as a comparatively clear space is requisite for the unobstructed operation of the current. At the conclusion of his lecture Professor Thompson said that given the proper base line, or base area, and adequate means of throwing electricity into the transmitting system, and sufficiently sensitive instruments to take up the tremors and translate the signals, it will be possible to establish electric communication between England and America across the intervening space. Considering, however, the extreme delicacy and sensitiveness of present electrical apparatus in other lines, he considers it probable that a considerable time will elapse before the desired instruments can be developed to suit the requirements of the new art.

ODDS AND ENDS.

The Fourth of July, 1898, is likely to see more powder burnt outside the limits of the United States than on any previous occurrence of the day. There is little doubt that Independence Day will be celebrated in a fitting manner near Santiago de Cuba, and it may be that Manila, too, will hear sounds that shall make the day memorable to the Philippine Islanders.

There is nothing like enough of the war bonds to go around. The rush to share in the popular loan has been so great that four times $200,000,000 worth of bonds could easily have been sold.

The new issue of postage stamps in commemoration of the Trans-Mississippi Exposition, at Omaha, which were placed on sale last week, are real works of art. The denominations included in the special issue are the 1, 2, 4, 5, 8, 10 and 50 cent and the $1 and $2 stamps. The designs, representing scenes characteristic of the Great West, are steel line engravings reproduced from famous paintings and drawings, and the colors are pleasing and artistic. The stamps will be a joy to the great army of philatelists in all parts of the world.

An international effort is to be made to secure a universal census of the world's population in the year 1900. The enormous difficulty of such an undertaking will be apparent when it is considered that estimates of China's population alone vary as much as 100,000,000. Africa, too, presents a tremendously difficult field, the estimates of the most careful statisticians regarding the population of the Dark Continent differing as widely as 50,000,000 or more. Li Hung Chang is said to have promised his co-operation in the matter, so the Chinese difficulty may be overcome, and now that Africa is being so thoroughly explored the figures for that country may be more correctly ascertained. The scheme is the most gigantic attempt of its kind since the memorable decree of Claudius Cæsar, sent out 1900 years ago, for "all the world to be enrolled."

Some one has suggested that as we have had the age of brass, the age of iron, the age of steel, and so forth, the twentieth century—if it be not the aluminum age, as many predict—may possibly be an age of glass, so many are the new uses to which that material is being adapted. An Indiana glass firm, for example, have lately received an order for 500 glass fence posts of the usual size, grooved for the reception of wire, for use in the West. The order has caused some speculation, and it is thought to be a possible introduction of an important new article in trade.

Among the "things not generally known" is the fact that this country possesses a single mine—not of gold or silver, or precious stones—which is richer in mineral wealth than any of the great mines of ancient or modern fame whose names are synonyms for dazzling wealth. Some statistics recently published regarding the famous Calumet and Hecla copper mine, on Lake Superior, show it to be the most profitable mining property in the entire world. Within the short space of 30 years in which this mine has been worked it has yielded in dividends the enormous sum of $53,850,000, while its actual present value is estimated at $55,000,000. For several years past the Calumet and Hecla has paid quarterly dividends of over $1,000,000, and its average net earnings have exceeded $6,000,000 per annum, or $20,000 for every working day of the year. To develop this great property cost $1,200,000, which has been returned more than forty-fold. Twenty thousand persons are dependent directly upon this one mine for their daily bread and butter, and the wages of the workmen are the highest paid in any mine of the kind in the world.

At the present moment the area of the British Empire is 53 times the size of France, 52 times that of Germany, three and a half times that of the United States of America, and thrice the size of Europe. It extends over 11,000,000 square miles and occupies one-fifth of the entire land surface of the globe. About 350,000,000 people own the sovereignty of Queen Victoria. The great Roman Empire, which embraced practically the whole of the then known world, was small in comparison to the modern dominion of the Anglo-Saxon race.

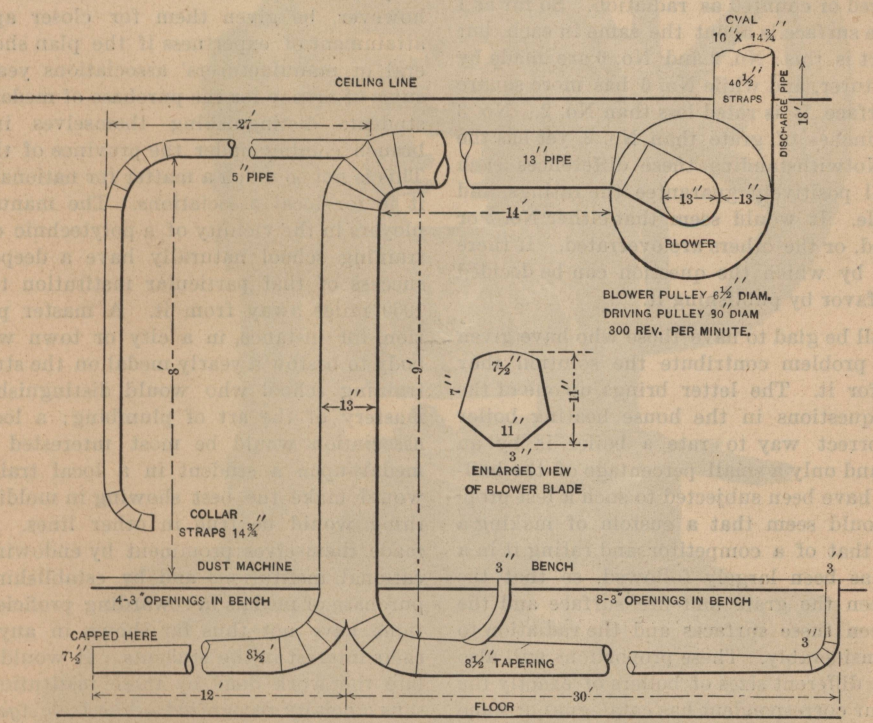
The steamer "City of Erie," built by the Detroit Dry Dock Company for the Cleveland & Buffalo Transit Company, to run between Cleveland and Buffalo, sister ship of the "City of Buffalo" of the same line, has just been completed. It is 324 feet long, 76 feet wide and 18 feet molded depth. There are six boilers 12 feet 6 inches in diameter by 11 feet 6 inches long, 130 pounds steam pressure, fitted with the Howden hot draft. The engine is of the compound beam condensing type, high pressure cylinder 52 inches in diameter by 8-foot stroke, low pressure 80 inches diameter by 12-foot stroke, 30 revolutions per minute. The electric light plant provides for 800 16-candle power lights, the current being furnished by two direct connected dynamos built by the Fuller Company. There are 97 staterooms on the promenade deck, including six parlors, and 64 on the gallery. Accommodations are provided for 50 second-class passengers. The ship is ventilated throughout by the McCreery ventilating system.

THE LETTER BOX.

SOME QUESTIONS ABOUT A BLOWER SYSTEM.

From X. Y. Z.—I send herewith a sketch of a blower job, of which I have to put in two. What pressure or suction will it produce in ounces per square inch at openings in the branch, and how many cubic feet of air will it exhaust per minute? What will be the number of revolutions of blower per minute, and what will be the velocity of the circumference in feet per second, the blades being 28 inches in diameter from tip to tip? We will be glad to have rules for estimating this or any other blower.

Answer.—The speed of the main shaft being 300 revolutions per minute, the speed of the fan, when its pulley



Some Questions About a Blower System.

is 6½ inches diameter and that on the main shaft 30 inches diameter, will be $\frac{300 \times 30}{6.5} = 1385$ revolutions per minute. As the diameter of the fan wheel is 28 inches, its circumference is $\frac{28 \times 3.14}{12} = 7.33$ feet, and its tip velocity at 1385 revolutions per minute will be $1385 \times 7.33 = 10,152$ feet per minute, or $\frac{10,152}{60} = 169.2$ feet per second. This velocity of the tips of the blades corresponds very closely to that due to pressure of 4 ounces per square inch. Reference to the latest catalogue of Sturtevant steel pressure blowers, p. 43, shows the velocity corresponding to 4 ounces to be 170 98 feet per second, or 10,258 6 feet per minute. As it approximates closely to the conditions of operation of the above fan, it may here, for simplicity, be adopted as representing the result obtained. This pressure of 4 ounces per square inch will be maintained over an area which is determined by the dimensions of the wheel. This area is known as the square inches of blast, or as the capacity area, and is usually determined by multiplying the diameter of the wheel in inches by the width of the outer circumference in inches and dividing by 3. Thus, $\frac{28 \times 7.5}{3} = 70$ square inches. This is in a sense a theoretical value, for, as will be noted, the outlet of the fan casing is oval, 10 x 14¾ inches, having, probably, at least 120 square inches of area. In practice, however, the resistance of the inlet and outlet piping is such as to have the same effect in reducing the flow of air as would be produced by a smaller outlet without any piping. A long and extensive system of piping generally has the effect of making the effective area of discharge about equal to the capacity area. If this area be increased the pressure, as above figured, will be reduced, but if the area be decreased the pressure will remain the same. The above calculated capacity area is 70 square inches $= \frac{70}{144} = 0.48$ square foot. If the air travels through this opening at a velocity of 10,152 feet per minute it is evident that the volume passing in one minute will be found by multiplying the area by the velocity, thus: $48 \times 10,152 = 4872.96$ cubic feet. With the arrangement of piping shown in sketch the sum of all the inlets is:

	Square inches.
One 5-inch pipe =	19.635
Twelve 3-inch pipes = 7.07×12	84.84
	104.475

—which is 50 per cent. in excess of the capacity area.

If all these openings are free it is fair to assume that the fan would draw through them a volume of air about equal to that above figured, for the excess of air over the capacity area will be about counteracted by the losses due to friction in the pipes. At the same time a suction would be produced at the branches which would be very nearly 4 ounces per square inch. It must be evident that even slight changes in the arrangement of piping will have considerable effect upon the results obtained. Thus if the capped end of the pipe were opened the volume of air handled would be considerably increased.

RATING CAST IRON BOILERS.

From C. W. H., Brooklyn, N. Y.—In *The Metal Worker* of April 30, in reply to "W. J. Y.," a rule is given for determining the capacity of horizontal tubular boilers, and I would like to know a rule for determining the capacity of sectional cast iron house heating boilers. I have always calculated the capacity from the grate and fire surface, but I had occasion recently to look into the merits of several different boilers for a friend who resides in the country and who wished to purchase a steam heating boiler to carry 1800 square feet of radiation. Without mentioning names I will give sizes and capacity of six boilers which I examined, and it will be seen that with one exception they vary but little in grate surface, but there is quite a difference in their rated capacity. The thing that puzzled me most was that those which have the most grate surface are rated the lowest, with the one exception.

Number.	Grate. Inches.	Rated Capacity. Feet.	Sections.	Length. Inches.	Width. Inches.	Height. Inches.
1	70 x 30	2,000	10	80	43	70
2	40 x 36	2,000	8	82	57	70
3	57 x 26	1,600	10	78	49	69
4	28 x 56	2,150	9	80	36	68
5	36 x 34	2,000	7	86	66	75
6	30 x 50	1,800	10	96	43	70

No. 1 is rated to carry 2000 feet of radiation in addition to the mains, and all others are rated to carry their ratings with mains covered or counted as radiation. So far as I can judge, the fire surface is about the same in each, but the perplexing part is this: No. 2 and No. 6 are made by the same manufacturer, and while No. 6 has more square inches of grate surface, it is rated less than No. 2. No. 3 has more square inches of grate than No. 2, yet has the lowest rating. Notwithstanding these differences each manufacturer will positively guarantee the ratings, and each is responsible. It would seem that either No. 3 or No. 6 is underrated, or the others are overrated. If there is any fixed rule by which the question can be decided you will confer a favor by publishing it.

Note.—We shall be glad to have those who have given attention to this problem contribute the solution they have arrived at for it. The letter brings up one of the most perplexing questions in the house heating boiler business. The correct way to rate a boiler is by an evaporation test, and only a small percentage of the boilers on the market have been subjected to such a test properly made. It would seem that a custom of making a boiler similar to that of a competitor and rating it in a similar manner has been largely followed, so that the proportions between the grate and fire surface and the proportions between these surfaces and the radiation to be carried vary considerably. These proportions will also vary materially in different sizes of boilers of exactly the same make. If our correspondent has catalogues of some houses for several years he will notice that the same boilers have a much lower rating to-day than they had when they were first put on the market. The evils of overrating have been productive of much trouble to the heating contractor and the boiler manufacturers and their competitors. By overrating a boiler it is possible to quote a lower price for a boiler to do a given amount of work, and thereby secure a slight advantage over a competitor who has rated his boiler conservatively or well within its capacity. It would be very difficult to give a rule that would apply generally.

WORK ON THE PACIFIC COAST.

From P. O. B., Massachusetts.—Will some reader of *The Metal Worker* please tell me what the condition of business is in the steam piping line on the Pacific Coast?

The National Association of Credit Men held their third annual convention in Detroit last week. They discussed important questions in connection with the granting of credits and the causes of business failures, and their proceedings will undoubtedly be accorded considerable attention from business men. But one cannot help asking why an association of this character, composed of individuals who consider solvency the indispensable requisite to a business existence, should wind up the year with a deficit of something over $1000, as reported by the treasurer. It may be that some association of ordinary business men is similarly struggling along trying to meet a deficit, but the fact has not been made public if there is one. The lords of the credit desk are believed to be alone in this distinction.

Medals for Manual Training Schools.

Manufacturers are taking great interest in the progress of mechanical education. Evidence to this effect is continually coming to light in the proceedings of the various manufacturers' associations. The students of the manual training schools are making their impress in numerous lines, and employers cannot help expressing their gratification at the manner in which the standard of every craft is being raised by the superior intelligence which has been thus infused into the mass. While the benefits of the training schools are shared both by the students and by those who become their employers, it is believed that the latter should display in a more practical way than hitherto the deep interest felt by them in the success of this system of improving our mechanical trades. The students are, of course, working to secure the best possible results for their personal advancement in the occupation which they intend to follow. An additional incentive would, however, be given them for closer application in the attainment of expertness if the plan should become general of manufacturers' associations yearly setting aside sums of money for the purchase of medals to be given the students distinguishing themselves in the particular branch coming under the province of these associations. This is not so much a matter for national organizations as it is for local associations. The manufacturers or employers in the vicinity of a polytechnic college or manual training school naturally have a deeper interest in the success of that particular institution than if they were 1000 miles away from it. A master plumbers' association, for instance, in a city or town would be a proper body to bestow a yearly medal on the student of the local training school who would distinguish himself by his mastery of the art of plumbing; a local foundrymen's association would be most interested in bestowing a medal upon a student in a local training school who would make the best showing in molding, and the same thing would be true in other lines. Individuals have made themselves prominent by endowing technical educational institutions and by establishing funds for the purchase of medals in rewarding proficiency, but associations have not thus far shown in any similar manner their interest in the students. It would certainly stimulate the work done by these institutions to have them thus officially recognized.—*The Iron Age.*

Statistics gathered by the *Railroad Gazette* show that there has been built in the United States during the first six months of this year 1092 miles of railway. Alabama heads the list with 125 miles, then follow Missouri, 94 miles; Louisiana, 78 miles; New Mexico, 71 miles; California and North Carolina, 65 miles; Texas, 63 miles; Georgia, 62 miles, and Oklahoma Territory, 61 miles. Of the total mileage, 950 miles, or eight-ninths, was built in the States south of the Ohio River. With the exception of 5 miles in Maine, not a mile was built in the New England States.

The investment of Santiago de Cuba by land and sea and the formation of a squadron to proceed at once to the Spanish coast are notable war events of the week. They both indicate that the conflict has reached an acute stage. With Santiago and Admiral Cevera's fleet captured and American war vessels threatening their home coasts, the Spaniards will have an increased incentive to seek for peace.

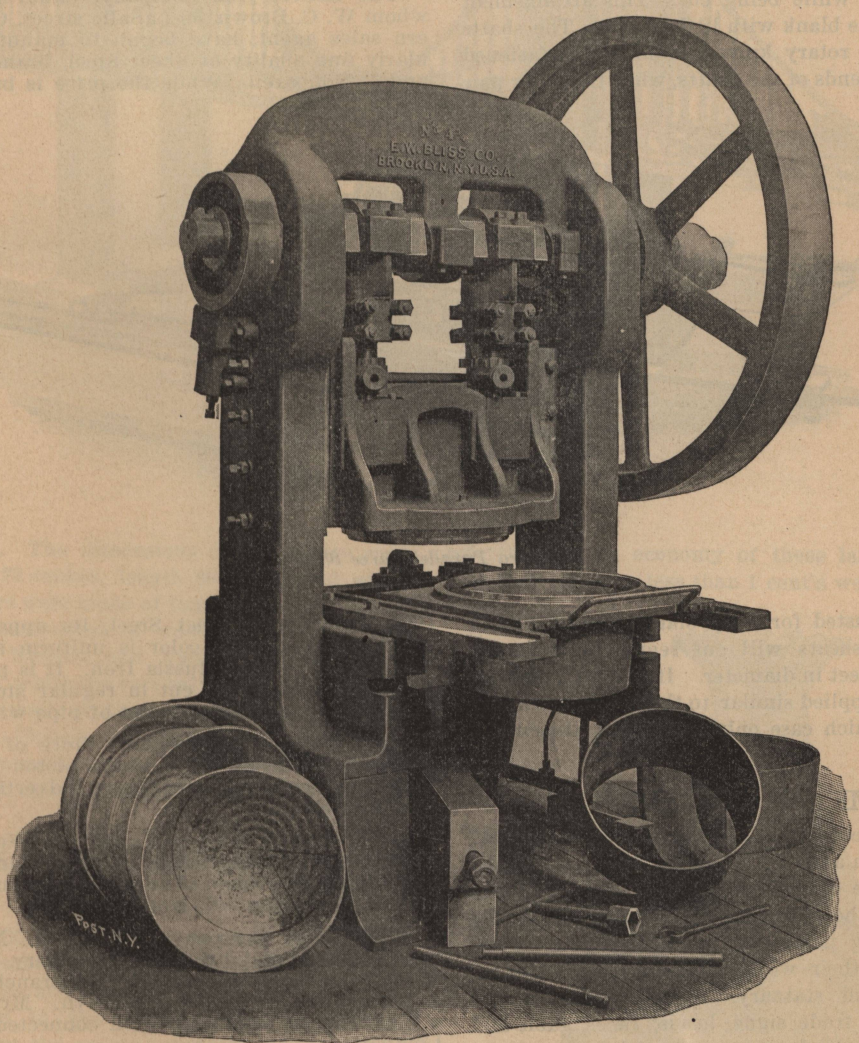
The fifteenth annual meeting of the American Institute of Electrical Engineers was opened at Omaha, Neb., on Monday, June 27, with about 100 delegates present. Dr. Arthur E. Kennelly of Philadelphia presided, and numerous papers pertaining to electrical engineering were read.

SHEET METAL WORK.

THE BLISS SPECIAL DOUBLE CRANK PRESS.

The special double crank press built by E. W. Bliss Company, 16 Adams street, Brooklyn, is intended for the manufacture of sheet iron and steel goods, such as vapor stoves, wrought iron ranges, foot tubs, kitchen boilers, &c., and it may also be arranged for forging purposes. The cross head is guided in long adjustable bearings so that cutting and perforating dies, as well as others requiring great accuracy of movement, may be operated. As shown in the cut the press is specially arranged for wiring the top edges of foot tubs, heavy pails and other large sheet metal articles. A removable front piece is supplied to the press when fitted in this manner, making it available for large cutting, combination and shaping dies in the manufacture of body blanks, bottoms, stamped covers, &c. It may also be used for horning purposes, by fastening in it a horn and force, so that the press is practically a universal machine for all the die operations in the manufacture of heavy tinware. It is generally made with the following dimensions: Width between uprights, 38 inches; distance between gibs, 31½ inches; standard stroke of slide, 2 inches; maximum stroke of slide, 5 inches; adjustment of slide, 3 inches; standard distance bed to slide when stroke is down and adjustment up, 10 inches; diameter and face of balance wheel, 60 x 70 inches; weight of balance wheel, 1800 pounds; speed of balance wheel, 60 to 85 revolutions per minute; diameter of shaft, 5 inches; area of die bed, 40 x 37 inches; weight about 11,500 pounds.

These dimensions, however, may be modified somewhat, and, as shown in the illustration, the press is made with 42 inches between the housings so as to wire up to 24 inches in diameter on heavy tubs. In this case the machine weighs 14,000 pounds. It is also built with gearing of 7½ to 1, the diameter of the large gear being 62 inches. When so built the press also weighs 14,000 pounds.



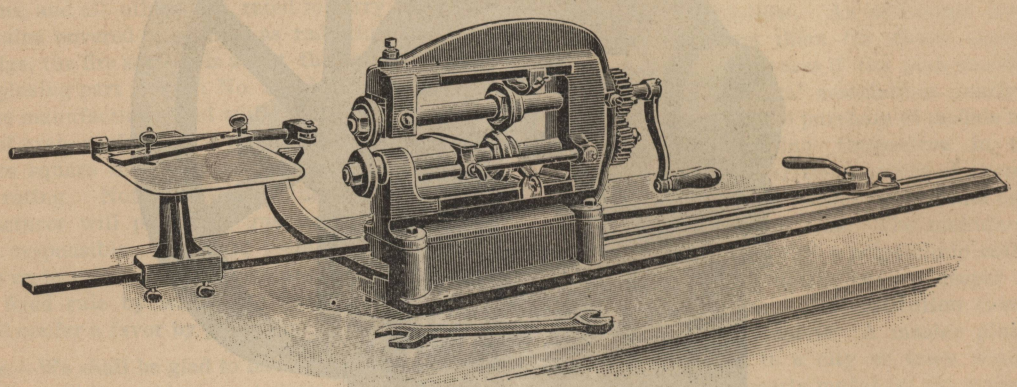
The Bliss Special Double Crank Press.

In spite of the advances in the manufacture of Tin Plates in recent years, the complaint about pin holes is still heard, and there is a call for Plates of the old fashioned style made from real charcoal iron. It was to meet this demand that Gummey, McFarland & Co., Philadelphia, Pa., brought out the Gummey Anti-Pin

Hole Bright Plates, made from genuine charcoal Swedish iron bars, and in the same way that charcoal Tin Plates were produced from 50 to 75 years ago. We understand that besides being used for tinware, these Plates are extensively adopted for gutters, valleys and roofs where a superior quality of Plates is desired. In testimony of the good results obtained from the use of this Plate, Gummey, McFarland & Co. have in their possession a coffee pot and wash boiler which have been used for over six years, and are in as good condition as when first made. As is to be supposed, these Plates command a higher figure than steel Plates of ordinary manufacture, but as Messrs. Gummey, McFarland & Co. very sanely point out, "you cannot buy silk at the price of calico."

NIAGARA PARALLEL CURVE SHEAR.

The accompanying illustration shows a rotary shear, made by the Niagara Machine & Tool Works, Buffalo, N. Y., intended for cutting the two parallel curves of body blanks for tapered tinware at the same time. The pivot of the swinging arm has been placed back of the machine to obtain a compact construction. The swinging arm carries a table with gauges and clamps to hold the sheet firmly in its place while being cut. This arrangement allows of cutting the blank with little waste. The shafts carry two pairs of rotary knives. One pair is fastened permanently at the ends of the shafts, while the other pair



The Niagara Parallel Curve Shear.

can be quickly adjusted for body blanks from 3¾ to 12 inches wide. The shears will cut segments of circles from 9 inches to 12 feet in diameter. If desired a circular attachment can be applied similar to that of the ordinary circle shears, in which case only one pair of the cutters is used.

SHEET METAL ORNAMENTS.

The Missouri Sheet Metal Ornament Company, 2117 and 2119 Washington avenue, St. Louis, Mo, have issued a fine large catalogue of their specialties. The catalogue comprises 64 pages, the size of the page being 10½ x 13½ inches. The opening pages are devoted to the more imposing specimens of their work in sheet metal, as, for instance, fountains and statuary. Following these are beautifully executed trade signs, heads, faces, gable and panel ornaments, garlands, festoons, wreaths, capitals, ribbons, rolls for brackets, ceiling center pieces, rosettes, bracket faces and sides, leaves, modillions, crockets, egg and dart moldings, enrichments, ceiling designs, finials, weather vanes, corbels, shells, points, fleurs de lis, balusters, rope and Greek moldings, dentil moldings, finishes for mansard decks and windows, scrolls, crestings, twist tops, pinnacles, quoin blocks, shingles, urns, vases, &c. The engravings in this catalogue are unusually good, bringing out the special features of the company's designs.

Circulars issued by the Globe Ventilator Company, Troy, N. Y., call attention in a tasteful manner to some of the specialties of their manufacture. The Globe Ventilator itself is illustrated by general and sectional views, its advantages are briefly alluded to, its usefulness for chimneys, show windows, churches and in the ventilation of all sorts of buildings is pointed out, and on the back page is a price-list of all sizes from 2 inches to 6 feet in diameter. A second little circular shows the Globe Ventilated Ridging in copper and galvanized iron, which is described as an ornamental, perfect and storm proof Ventilator. Different styles of this well-known finish are shown in the circular, and its many merits are briefly summarized on the back page.

FLASHINGS.

Last week the Ætna-Standard Iron & Steel Company, Bridgeport, Ohio, signed the Amalgamated Association scale for their Mingo Junction plant.

The Canton Steel Roofing Company, Canton, Ohio, call the attention of the trade to some of their handsome and extensive lines of Embossed Steel Ceiling and Side Wall in a small 3½ x 6 inch catalogue which they are distributing. The first few pages show continuous patterns, then panel patterns, while the center page in the little pamphlet shows the interior effect of a billiard room the walls and ceilings of which are of stamped metal. Following this center piece are other styles including Embossed Moldings, while at the end are given some of the advantages of the goods of this concern and directions for ordering ceilings.

The Reeves Iron Company, Canal Dover, Ohio, for whom W. C. Brown, 36 LaSalle street, Chicago, is Western sales agent, have begun to manufacture a particularly fine quality of Sheet Steel, branded A Nonpareil and B Nonpareil. While the price is but a trifle above that of ordinary Sheet Steel, its appearance is very much superior. The color is uniform and remarkably like that of genuine Russia Iron. It is packed in boxes, 48 sheets to the box, cut in regular stove pipe size so that each sheet makes a joint of pipe without trimming.

As a result of the recent failure of the Niles Mfg. Company of Niles, Ohio, the Holeton patent for slip joints and ends for spouting is advertised for sale in another column.

A. C. Jessup, who represents J. Wood & Brothers Company of Conshohocken, Pa., manufacturers of Sheets and Plates, has removed to the Beard Building, 120 Liberty street, Room 907, New York City.

E. W. Bliss Company of Brooklyn, N. Y., manufacturers of sheet metal working machinery, have placed W. S. Smith in charge of their Western branch, at Cincinnati, to succeed the late C. W. Ellsworth. Mr. Smith, who is a Westerner by birth, has been connected with the Bliss Company for some years.

The report of the Suez Canal for the year 1897 discloses a falling off in receipts amounting to $1,300,000. The loss of traffic is attributed to the effects of the famine and plague in India.

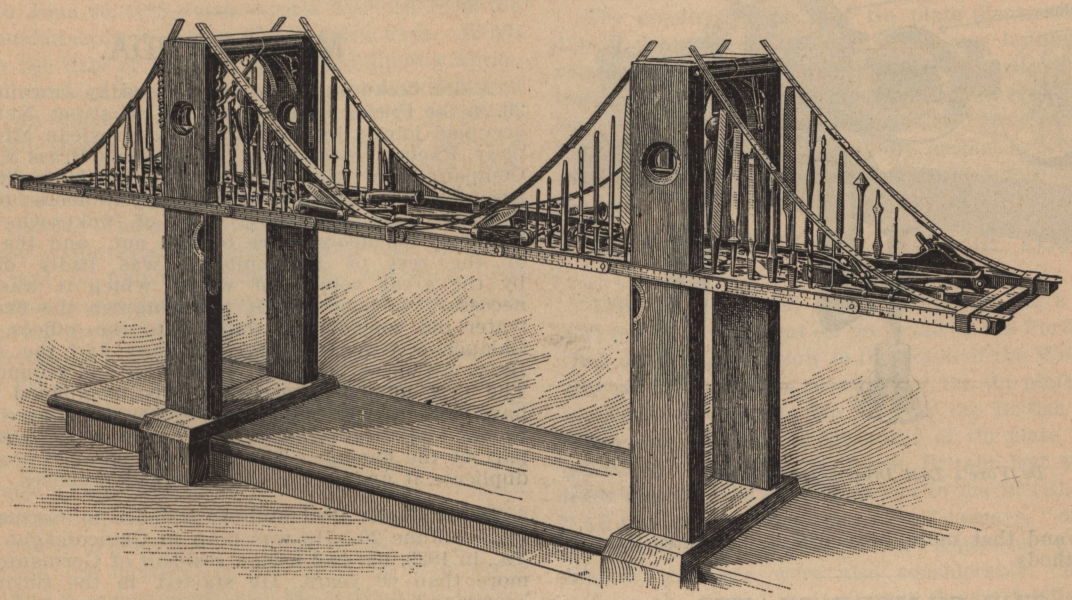
A British Government report just issued gives discouraging information regarding the Salem iron ore beds of Madras, India. The superintendent of the East Indian Geological Survey states that they contain only 40 per cent. of iron, instead of 60 per cent., as reported by previous authorities.

The Government of Victoria are proposing to substitute iron and steel instead of wood for the 80,000 telegraph poles now erected in the colony, and provision for a first installment of 5000 posts has already been made in the estimates of the Government for the next financial year.

THE RETAIL STORE.

SUSPENSION BRIDGE WINDOW DISPLAY.

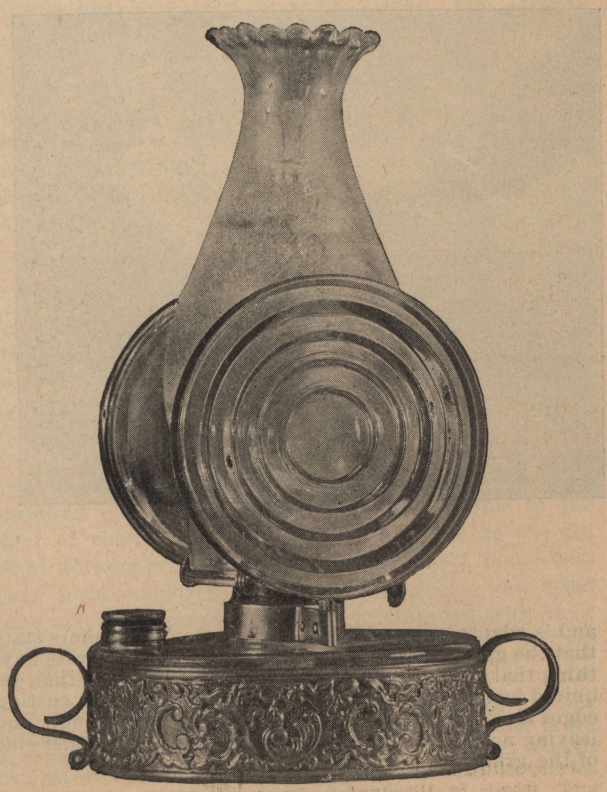
A unique and attractive design for a show window is here illustrated, having been reproduced from a window display of Charles Mann & Co., 2352 Third avenue, New York. The dimensions of the bridge were as follows : Hight 22 inches, length 60 inches and width 10 inches. The piers were made of four plumbs and levels, the arches being constructed of wood and covered with Lead Pencils, Sail Needles and Awls. The cables were Spring Joint Rules, while the vertical stays reaching from cables to floor were made of Auger Bits, Compasses, Drills, Files, Miter Tools, Chisels, Taps, &c. For the floor two panes of Glass were used, and on it were arranged Drawing Tools, Calipers, Speed Indicators and a number of other fine Tools.



Suspension Bridge Tool Display.

THE NORRIS LIGHT REFRACTING OIL LAMP.

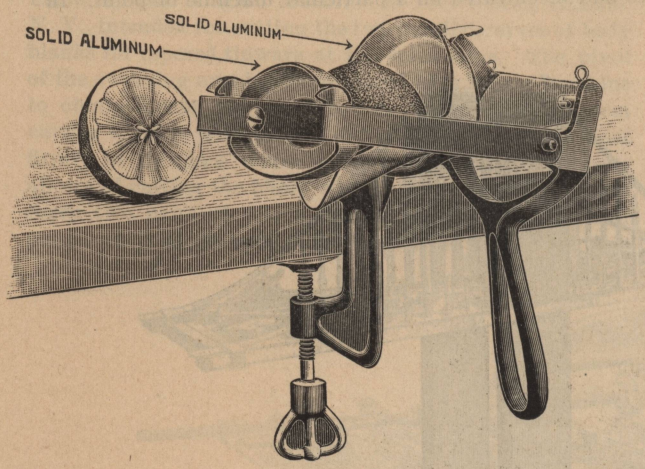
W. R. Norris, 235 Broadway, New York, has brought out an oil lamp embracing certain interesting features that will attract the attention of the trade. A general view is presented in the accompanying illustration, which clearly shows the construction of the lamp, which is designed primarily for readers, the essential parts consisting of a Fresnel lighthouse lens, bound in brass and supported on a brass standard surrounding the burner. Directly opposite, on the other side of the chimney, is a concave silvered glass which acts as a reflector. The reflector and the lens being fastened together, they can be turned about the lamp or removed entirely if desired. The effect of the reflector is to turn back all the light issuing from the rear of the lamp and throw it through the lens, which is so constructed as to bring all the beams of light parallel. Consequently in front of the lens there is an area of brilliant illumination obtained from a single wick oil lamp. The illustration shows the form of lamp at present on the market, which is a very satisfactory and serviceable one, it having been designed to stand low so as to bring the light coming from the lens at the proper hight for reading purposes. The reservoir of glass is 6 inches in diameter by 2 inches deep, bound in stamped brass of decorative pattern, and provided with handles at either side so that it can be readily lifted and carried. A further application of the lamp is for workshops and in places where a brilliant light is to be concentrated on a particular machine or point. In referring to the economy of these lamps, it is stated that they consume less than 1 cent's worth of oil in eight hours. The manufacturer will also furnish to order the Norris light refracting device for attachment to any kerosene, gas or electric lamp.



The Norris Light Refracting Oil Lamp.

DE VORE'S LAST DROP LEMON SQUEEZER.

The accompanying cut represents a lemon squeezer put on the market by L. M. De Vore & Co., Freeport, Ill. The mechanical construction of the squeezer is spoken of as correct and substantial. The pressure plate and cup receiving the acid are aluminum, which is not susceptible to the action of the acid, and can be readily removed to be cleansed. It is explained that with the device the sides of a whole lemon or a half or quarter of a lemon are pressed together, which squeezes out the free juice only, leaving the cells standing free, clean, without mutilation and without extracting the oil of the rind. The manufacturers claim that the squeezer is adapted to economically and rapidly extract the juice of lemons, oranges, onions



De Vore's Last Drop Lemon Squeezer.

and beef, and that more juice can be extracted than by other methods.

THE GILMORE GRATER.

Sidney Shepard & Co., Buffalo, N. Y., have recently put on the market the grater shown in the accompanying cut. The point is emphasized that it cuts only one way

The Gilmore Grater.

and is adapted to a wide range of uses. The makers state that the grater is self cleaning and that it will grate anything that can be grated in a much shorter time than required by an ordinary grater; also that the sharp cutting edges make clean cuts, the gratings passing through and leaving nothing to adhere to either the upper or under side of the grater.

E. J. Turner has purchased the Harness business of S. B. Riggs & Son, Clyde, Kan., who continue in the Hardware, Stove, Implement and Sporting Goods line. They refer to business as the best in five years, more cash being paid for goods and less extended credit asked. Crops are in splendid shape.

THE CLIMAX CORN POPPER.

The Quincy Hardware Mfg. Company, Quincy, Ill., have some new corn poppers, among which is the Climax. These corn poppers have a stiff bowl, which is moved over the coals by turning a small crank attached to the right hand side of the handle. They are made with either a wire or tin lid, which is so fastened that it cannot be shaken loose, but can be easily opened when desired. The Climax is a very strong popper, the bowl being made of stiff hardware cloth, having a heavy tin rim all round it. The handle is not made of wood, which is liable to be charred by the intense heat of the fire, but consists of twisted tinned wire having a small wooden grip at the handle end, while at the bowl end there are two prongs which go through holes in the tin rim. The Quincy corn poppers heretofore made have had a wide sale, and the improved styles now brought out are expected to meet with still greater success.

MEMORANDA.

A fire broke out early on Wednesday morning, June 29, in the Phelps Building, 15-21 Cliff street, New York, occupied jointly by the Lalance & Grosjean Mfg. Company, Phelps, Dodge & Co., the Ansonia Brass & Copper Company and the Ansonia Clock Company. The fire, which originated in the upper floors, occupied by the clock company, was of unknown origin. The two top floors were burned out, and the whole of the rest of the building was badly damaged by the great volume of water which it was found necessary to pour into it to extinguish the fire. This water did considerable damage to the offices of the Lalance & Grosjean Mfg. Company and the Ansonia Brass & Copper Company on the first and ground floors. The first named concern had just completed a very handsome sample room, of which they were justly proud, and they refer to that as the most regrettable part of the damage. The firm will at once proceed to duplicate it and repair the damaged premises.

Oliver Jester died at his residence in Germantown, Pa., on June 26. He was born in Chincoteague Island, Va., in 1829, but had been a resident of Germantown for more than 60 years. He started in the tinsmithing, heater and range business in 1857, and was looked upon as one of the reliable merchants of the town.

The patent for the garbage can shown in the last issue of *The Metal Worker*, as made by the Iron Clad Mfg. Company, was taken out by John S. Brooks, 195 Berkley place, Brooklyn, N. Y., who advises us that he has the Western States to dispose of on royalty.

A. J. Dill succeeds the firm of Dill & Hamilton in the Stove business at Kaslo, Wash.

George F. Wilbraham, Windsor, Conn., has moved his stock of Stoves and House Furnishing Goods to a new store in the Risley Block.

The Aluminum Mfg. Company, Two Rivers, Wis., are making some very artistic Trays of stamped and decorated Aluminum, which are excellent examples of the adaptibility of the metal to ornamental purposes. A Tray bearing a fine portrait bust of Admiral Dewey, which has been forwarded to us, is an especially good specimen of this work. The company also make a souvenir Tray of the battle ship "Maine."

The Owl Hardware Company of Brazil, Ind., have been incorporated. They are carrying a stock including all kinds of Hardware, Stoves, Tinware, Agricultural Implements, &c. They refer to their store as strictly up to date and report a fairly good business.

C. E. Simpson has succeeded Simpson & Schmidt, Sparta, Wis. Mr. Simpson will continue the Hardware, Stove, Tinware and Agricultural Implement business at the old stand.

Newell & Gillett, dealers in Stoves, Tinware and Plumbers' Supplies, Shelburne Falls, Mass., have dissolved partnership. H. Newell & Co., who took the business, have disposed of it to Fayette & Mitchell, who will continue at the old stand. Mr. Mitchell is a practical plumber and tinsmith.

J. H. Parks has purchased the Hardware, Stove, Tinware, Implement and Sporting Goods business of the Jackson Hardware Company, Lorimor, Iowa.

Burleson Hardware Company of Niagara Falls, N. Y., have been incorporated with a capital stock of $15,000, and the following directors: Wiliam E. Burleson, M. C. Burleson and M. Amberg. They occupy a modern building with a stock consisting of General Hardware, Stoves, Tinware, Furnaces, Plumbing, Steam and Gas Fitting Supplies, &c.

TIN PLATES.

The Metal Worker Quarterly List of Tin Plate Works and Brands

Herewith are presented *The Metal Worker's* regular quarterly lists of American tin plate works, corrected and revised to June 30, 1898, from reports received from the several manufacturers during the past few days. In addition to the lists of tin plate mills and dipping works, with the brands of bright and terne plates manufactured by each, an alphabetical list of such brands is given, which will enable the dealer or consumer to find at a glance the name of the maker of any special plate. Another alphabetical list contains the names of dealers' special brands. These various lists, which cover practically the whole extensive field of American tin plate brands, will be found invaluable for reference. The present ones give some 50 or more names of new brands added during the past quarter.

The following abstract of the information contained in the July list of tin plate works will furnish a comprehensive idea of the present condition of the tin plate industry in the United States: There were at the end of June 66 separate plants engaged in the manufacture of tin and terne plates for the market, or in the production of black plate for tinning purposes, as well as one 30-mill tin plate plant in course of erection. Of these works, 44, operated by 42 firms, are included in the list of tin plate works proper—that is, concerns who roll their own black plate—38 of them also coating and finishing their product for the open market. Six plants at present produce only black plate, which they dispose of to the 23 dipping plants detailed in the second list. These 44 black plate plants possess 253 complete hot mills, and five of them are adding to their equipment 24 new hot mills. In addition, one new works, with 30 mills, is in course of construction, making a grand total of 47 separate black plate plants with 307 hot mills, finished and building, on July 1, 1898.

On April 1 last the number of finished mills was 237, and of mills building, 65, making a grand total of 302 hot mills. Thus, there is a net gain of five hot mills for the quarter. During the three months ended June 30, 16 new hot mills were completed and added to the producing capacity of the industry, as follows:

	Mills.
Atlanta Steel & Tin Plate Company	2
Cincinnati Rolling Mill & Tin Plate Company	1
Johnstown Tin Plate Company	2
Laughlin Nail Company	8
United States Iron & Tin Plate Mfg. Company	3
Total	16

The Humbert Tin Plate Company of South Connellsville, Pa., began the erection of two new hot mills and the United States Iron & Tin Plate Mfg. Company of Demmler, Pa., of three additional hot mills, making five in all.

Of the 44 completed black plate plants, only one, a three-mill works. was reported as shut down at the end of the quarter. About five other mills in two or three works were for one cause or another idle, leaving 245 hot mills in active operation on June 30, as against 222 on March 31 last. This is by far the largest capacity ever yet operated in the American tin plate industry, representing, at a very conservative estimate, a current output equivalent to 6,200,000 boxes a year, with a potential output—if all mills were in operation to their full capacity—of over 7,000,000 boxes of tin plate a year. This is equal to the average annual consumption of tin plates in the United States in a good year. Adding the 54 mills now building, all of which will be in operation this year, will give a further capacity of 1,350,000 boxes, bringing up the total capacity to at least 8,250,000 boxes by the end of 1898.

The list of dipping works shows no change from that given three months ago. Twenty-three of these establishments, with a total of 120 tinning sets, are given. Four or five are not in operation at all, and of the balance only ten or a dozen are running to anything like their capacity.

The erection of no new tin plate plants was begun during the quarter; but one, which was building three months ago—the Johnstown Tin Plate Company of Johnstown, Pa.—has been transferred to the active list. The large new plant of the Shenango Tin Plate Company, at New Castle, Pa , is being rapidly pushed to completion, and will join the list of producing works before the end of the year.

THE PACIFIC COAST TRADE LOST TO WALES.

The British Consul at Portland, Ore., in a late report to his Government on the trade of the Portland district, deals a severe blow to the hopes of the Welsh manufacturers as to their retention of the tin plate market on the Pacific Coast. He informs the British Foreign Office that although 62,932 boxes of tin plate were received at Portland from Great Britain last year, the trade may now be considered lost to the British makers. "All the roofing plates used were," he says, "of American make, and the receipts of American plates for canning purposes were also considerable. Tin plate mills in the United States," adds Consul Laidlaw, "are in a position to hold the trade, as the quality produced is superior, and the tariff gives efficient protection. Lighter plates are now used in the canned goods trade, weighing usually 100 pounds to the box ; as light as 85 pounds has been used to some extent. The average price of standard 100-pound coke plates, at Portland, was $3.75. There were practically no English tin plates on the way in May, and American would be used almost exclusively in 1898. The consumption for canning purposes on the Columbia River alone exceeded 65,000 boxes. English tin plates," the Consul says, "cannot at present be laid down under $4.10 per box, while American sell at $3.25."

FRENCH TIN PLATE INDUSTRY.

The British Vice-Consul at Nantes, France, in a recent report to his Government, gives some information regarding the tin plate industry in that country. He says :

A fair quantity of tin plate is imported by the canning companies, who are numerous in this district, but for some time past the Forges de Basse-Indre have been turning out large amounts of tin plates of excellent quality. I can scarcely consider this in the light of competition with the home trade, as the tin plate workers are almost exclusively British. These men have been employed for nearly five years, and some time ago an attempt was made to dispense with their services, the only result being that they had to be reinstated, and at higher wages.

The proposed combination of all the Maine sardine factories, to which reference was recently made, is an accomplished fact. The incorporation of the American Sardine Company, embracing all the fish canneries on the coast of Maine, was registered last week. The new organization, who will have their headquarters at Bangor, Maine, have a capital stock of $3,000,000. It is said that John R. Searles, treasurer of the American Sugar Refining Company, is largely interested in the enterprise.

The Metal Worker Quarterly List of American Tin Plate Works.

TIN PLATE MILLS.

JULY 2, 1898.

	NAME OF FIRM.	LOCATION OF WORKS.	NO. OF HOT MILLS. Completed.	Building.	NAMES OF BRANDS. BRIGHT TIN PLATES. Charcoal.	Coke.	TERNE PLATES.	REMARKS.
1	ÆTNA STANDARD IRON & STEEL CO	BRIDGEPORT, OHIO	8	....	Ætna AA1, Ætna AA, Ætna A, Ætna.	Ætna	Belmont, Belmont Best, Belmont Special, Standard.	
2	AMERICAN TIN PLATE CO	ELWOOD, IND.	20	4	Hazen, Imperial, P-e-e-r-l-e-s-s, Premier	Hazen, Kanner, Koko, Kream, L-Wood	E-l-w-o-o-d, I-n-d-i-a-n-a, L-e-e-d-s, R-e-i-d.	Taggers brand, "Hazen."
		MONTPELIER, IND.	6	..				
3	ATLANTA STEEL & TIN PLATE CO	ATLANTA, IND.	6	....		Atlanta	Atlanta.	
4	BALTIMORE TIN PLATE CO	LOCUST POINT, BALTIMORE, MD	4	.	Baltimore	Baltimore	Baltimore.	
5	BEAVER TIN PLATE CO	LISBON, OHIO	6	....	Beaver A, Beaver AA, Beaver AAA.	Beaver	Beaver, Beaver Best, Beaver Extra, Beaver Special.	
6	BLAIRSVILLE ROLLING MILL & TIN PLATE CO	BLAIRSVILLE, PA.	2	....	Juno, Pansy, P. S. & Co	Apex	Bala, Crown, Devon, Kelso, Merion, Old Style Oil Finish, Orient Crown, Orion, Potts A L S Old Style, Potts Old Process, Rutter, Zenith.	
7	BRITTON ROLLING MILL CO	CLEVELAND, OHIO	3	....	Britton, Buckeye	Britton, Buckeye.	Britton, Buckeye.	
8	CANONSBURG IRON & STEEL CO	CANONSBURG, PA.	4	....	Canonsburg A, Canonsburg AA, Canonsburg AAA	Band, Ensign, Pennant	Aurora, Coin Old Method, Dawn, Gold Standard Redipped, Legal Tender Old Process, Medal Old Style, ML Old Style, Orient.	
9	CINCINNATI ROLLING MILL & TIN PLATE CO.	CINCINNATI, OHIO	4	....				
10	CRESCENT SHEET & TIN PLATE CO	CLEVELAND, OHIO	6	....	Crescent AAA, Crescent AA, Crescent A	Crescent C	Crescent 1 Star, Crescent 2 Star, Crescent 3 Star.	
11	CUMBERLAND STEEL & TIN PLATE CO	CUMBERLAND, MD	5	....				Make black plate only.
12	ELLWOOD TIN PLATE CO	ELLWOOD CITY, PA.	5	...	Anti-Rust, P.O.P., Saturn, Silverine.	American, American Palm	Banner, Charter Oak, M. F., Monogram, N. C. T., Weatherproof.	
13	FALCON TIN PLATE & SHEET CO	NILES, OHIO	6	..	Crocus, Daisy, Hyacinth, Jonquil, Tulip	Clover	Blueflower, Cornflower, Moonflower, Official, Starflower, Sunflower, Wildflower.	
14	GREAT WESTERN TIN PLATE CO	JOLIET, ILL	4	...	Moose	Elk	Drake, Duck, Swan.	
15	HAMILTON & CO	WEST NEWTON, PA	2	..				Make black plate only.
16	HUMBERT TIN PLATE CO	SOUTH CONNELLSVILLE, PA.	4	2		Humbert.		
17	IRONDALE STEEL & IRON CO	MIDDLETOWN, IND.	6	....	Albright	Crane	Crane, Crane Extra Coated, Crane Old Style.	
18	JOHNSTOWN TIN PLATE CO	JOHNSTOWN, PA.	2	..	Cambria	Best Coke, Johnstown, J.T.P.	Pearl.	
19	LA BELLE IRON WORKS	WHEELING, W. VA.	10	....	Woodward A, Woodward B	La Belle	West Virginia A, West Virginia B, West Virginia Old Style.	
20	LALANCE & GROSJEAN MFG. CO	HARRISBURG, PA.	4	..	L. & G. Mfg. Co. AA1, L. & G. Mfg. Co. AA2, L. & G. Mfg. Co. AA3, L. & G. Mfg. Co. AA5	L. & G. Mfg. Co. AA4, L. & G. Mfg. Co. AA6, L. & G. Mfg. Co. AA7	L. & G. Mfg. Co. A1, L. & G. Mfg. Co. A2, L. & G. Mfg. Co. A3.	
21	LAUGHLIN NAIL CO	MARTIN'S FERRY, OHIO	14	....	Laughlin	Laughlin	Laughlin.	
22	LICKING ROLLING MILL CO	COVINGTON, KY	2	....			J. D. L., M. F. H., M. F. H. Best, M. F. H. Extra, New South.	
23	MARSHALL BROS. & CO	PHILADELPHIA, PA.	6	....	Penn Treaty	Penn Treaty	Abercarne, Girard, Marshall, Penn Treaty.	
24	MONONGAHELA TIN PLATE CO	PITTSBURGH, PA.	9	5		Monon, Oliver (O.H.)	Iron City, Manchester, Sheffield, Soho.	
25	MOREWOOD CO., THE	GAS CITY, IND.	8	....	Dorothy, Grace, Jack	R. H. J.	F. W. B. Old Style, J. H. R., P. T. L.	
26	MORTON TIN PLATE CO	CAMBRIDGE, OHIO	3	....	Guernsey, Morton, Regent, White Rose	Cambridge, Thistle.	American Standard, Cambridge New Method, Cambridge Old Style, Economy, Leatherwood, North Star.	
27	NATIONAL TIN PLATE CO	ANDERSON, IND.	6	....	Donner, Irwin, Matter	Anderson, National		Monessen plant partly under construction.
		MONESSEN, PA.	5	9				
28	NESHANNOCK SHEET & TIN PLATE CO	NEW CASTLE, PA.	6	....				Make black plate only.
29	NEW CASTLE STEEL & TIN PLATE CO	NEW CASTLE, PA.	20	..	New Castle Best Palm, New Castle Palm, New Castle Lustro, Shenango	New Castle Palm, New Castle Greer	Juniata, New Castle Old Method, Shenango.	
30	OHIO RIVER SHEET & TIN PLATE CO	REMINGTON STATION, PA. (P.O. Ad. Agnew).	2	..				Make black plate only.
31	PENNSYLVANIA TIN PLATE CO	NEW KENSINGTON, PA.	6	....	Melvin, Range	B. G., Peconic	Columbia, Mora.	
32	PITTSBURGH TIN PLATE WORKS	NEW KENSINGTON, PA.	6	..	Onyx, Opal	Alba, Alba Extra, Lorna	Amber, Kensington, P. T. W. Old Fashion	Taggers brand, "Melba."
33	REEVES IRON CO	CANAL DOVER, OHIO	4	....				Make black plate only
34	SHENANGO TIN PLATE CO	NEW CASTLE, PA	....	30				Plant building.
35	SOMERTON TIN PLATE WORKS	BROOKLYN, N. Y.	3	...	Somerbrook, Somerton	Somerton		Not in operation.
36	ST. LOUIS STAMPING CO	ST. LOUIS, MO	8	....	Granite, St. Louis	Steel Coke	Acme Old Method, Alta, Extra Fine, S G, S L S Old Method.	
37	STAR TIN PLATE CO	PITTSBURGH, PA.	8	...		Star.		

38	Stickney Iron Co	Baltimore, Md	2	....	.....	Stickney Coke, Balto.		
39	United States Iron & Tin Plate Mfg. Co.	Demmler, Pa	7	4	U. S. Bright, Versailles, Youghiogheny Bright	Mifflin	Demmler Redipped, U. S. Eagle, U. S. Grant, U. S. Monongahela, U. S. Palmetto, U. S. Redipped.	
40	Wallace, Banfield & Co	Irondale, Ohio	4	....	Irondale A, Irondale AA, Irondale AAA, Irondale B, Irondale BC	Irondale C	Irondale A, Irondale AA, Irondale AAA, Irondale B, Irondale Old Style, Irondale W. B.	
41	Washington Steel & Tin Plate Mills	Washington, Pa	4	....	Washington	Washington	Washington, Washington Old Style.	
42	Whitaker Iron Co	Wheeling, W. Va	3		.....	.....	.....	Make black plate only.
	Total Hot Mills		253	54				

DIPPING PLANTS.

	NAME OF FIRM.	LOCATION OF WORKS.	NO. OF TINNING SETS.	NAMES OF BRANDS. BRIGHT TIN PLATES. Charcoal.	BRIGHT TIN PLATES. Coke.	TERNE PLATES.	REMARKS.
43	Alcania Tin & Terne Plate Co	Youngstown, Ohio	3	Alcania, Americana, Columbia, Sylvania, Virginia	Alcania, Helena, Wallflower	Columba, Los Angeles, Pasadena, Primrosa, Standard A1.	
44	American Tin & Terne Plate Co	Philadelphia, Pa	10	Arlington, Channing, Peerless	Imperial, Franklin	Alnacla, Alcania, Cambria, Hawthorne, Mahoning, Mayflower, Plumbum, Supreme	Lead coated plates.
45	American Tin Plate Mach. & Mfg. Co	Canal Dover, Ohio	8	†Althea, Carol, New Cresta, Rieka, Villette	Ariel, Delta, S. J. R.	Barto, Crown Old Method, Eminent Old Method, Mingo, Pencoyd, Preble Extra, Sanatoga, *Dover, *Dover Extra, *Dover Old Method	*Continuous roofing. †Tinned iron.
46	Cadwallader, C. W	Pittsburgh, Pa	4	Petunia, Primrose	.....	N. F., Optimus.	
47	Cincinnati Corrugating Co	Piqua, Ohio	1	.....	.....	Piqua.	
48	Ferguson Tin Plate Co	East Liberty, Pa	5	.....	.....	Ferguson's Extra Coated, Ferguson's Old Style, Ferguson's Redipped, Lima Redipped, Magnet, Volcano.	
49	Follansbee Bros. Co	Allegheny, Pa	5	Clifton, Finest	Furnace	Allegheny, Braddock Old Style, Duquesne, Kenton, Lionel, Neville Old Style, Oakmont, Old Reliable Redipped, Orbit Redipped, Pittsburgh, Protection Old Process, Raymond, Scott's Extra Coated, Sherwood, Thurso, Triumph Old Method	
50	Hamilton, John	Hazelwood, Pa	3	Ivy, Pansy	Pink	Bonus, Fort Pitt, G. A. R., Hamilton's best Redipped, Hamilton's Excelsior Hand Coated, Hazlewood, Killbuck, Lulu, Mingo Old Process, Osceola Old Style.	
51	Laufman (P. H.) & Co., Limited	Apollo, Pa	2	.....	.....	Laufman's Apollo.	
52	Laufman Tin Plate Co	Butler Junction, Pa.	4	.....	.....	Allegheny, Freeport, Laufman's Apollo, Tip Top.	
53	McDonald (The Jas.) & Sons Co	Cincinnati, Ohio	2	.....	.....	Cadot's Old Style, Clyde, Ender's Old Style, Eureka, Reinert Redipped, Special Redipped, The J. McD. & Sons Old Style.	
54	Merchant & Co., Incorporated	Philadelphia, Pa	8	Florence, Minerva, Palma, Pisa, Spa, Violet	Leslie, Rose	Alaska, American Old Style, Arch, Camaret, Elsie, Emlyn, Empire Hand Coated, Hickory, Kismet, Merchant's Old Method, Merchant's Roofing, Palm, Special Extra Coated, Stanley, *Tandem	*Continuous roofing.
55	Meurer Bros. Co	Brooklyn, N. Y.	8	Florida, Howard	Albert, Brooklyn	Excelsior, Flushing, Grace, Meurer's Genuine Tinned Iron Sheets, Meurer's Old Method, Meurer's Roofing, Pullman, Standard, Superior.	
56	Nivin & Hassard Tin Plate Co	Philadelphia, Pa	3	H. P., Jewel, Rambler	.....	Dandy, Echo, Nivin & Hassard New Method, N. & H. Roofing, Old Method, Sensation.	
57	Norristown Tin Plate Co	Norristown, Pa	7	.....	.....	Crown Royal, New Method, Norristown, Norristown Extra, Norristown New Method, Norristown Old Style.	
58	Old Dominion Iron & Nail Works Co	Richmond, Va	3	Belle Isle, Belmont	Bellevue, Belona	Albemarle, Cherokee, Chesapeake, Greenbrier, Indian, Kanawha, Mohawk, Pawnee, Potomac, Rivanna, York.	
59	Phillips Tin Plate Co., Incorporated	Philadelphia, Pa	5	Century, Oak	Gladys, Walnut	Boston, Boston Old Method, Columbus, F. R. P. Extra, National, Phillips' Roofing, Republic, Zero.	
60	Reading Tin Plate Co	Reading, Pa	3	.....	.....	America, C. H., H. M., Horton, L. C., Mt. Penn, Reading Old Style, Reading Roofing, Spring.	
61	Record Mfg. Co	Conneaut, Ohio	2	Record Charcoal A1, Record Charcoal A	Record Coke.		
62	Simpson (W. T.) & Co	Cincinnati, Ohio	3	.....	.....	Boaz, Queen City Old Style, Riverside.	
63	Taylor (N. & G.) Co	Philadelphia, Pa	22	Brilliant, Hand Dipped, Linden, Merion, Royal	Almond, Locust, Mint	Columbia, Globe, Knoxall, Maple Old Method, Spruce, Taylor Old Style, Taylor Roofing Tin, Willow.	
64	Trotter (Nathan) & Co	Philadelphia, Pa	3	.....	.....	.....	Not in operation.
65	Wheeling Corrugating Co	Wheeling, W. Va	6	Ewing, Fort Henry, Wheeling	Thayer	Eleanor, Helen, Margaret, Nelson, Wylie.	
	Total Tinning Sets		120				

Alphabetical List of Makers' Brands of American Tin and Terne Plate.

(N. B.—The numbers given below correspond to those opposite the names of makers on the foregoing pages.)

July 2, 1898.

BRIGHT CHARCOAL PLATES.

Name.	*Maker.*
Ætna	1
Albright	17
Alcania	43
Althea	45
Americana	43
Anti-Rust	12
Arlington	44
Baltimore	4
Beaver	5
Belle Isle	58
Belmont	58
Brilliant	63
Britton	7
Buckeye	7
Cambria	18
Canonsburg	8
Carol	45
Century	59
Channing	44
Clifton	49
Columbia	43
Crescent	10
Crocus	13
Daisy	13
Donner	27
Dorothy	25
Ewing	65
Finest	49
Florence	54
Florida	55
Fort Henry	65
Grace	25
Granite	36
Guernsey	26
Hand Dipped	63
Hazen	2
Howard	55
H. P	56
Hyacinth	13
Imperial	2
Irondale	40
Irwin	27
Ivy	50
Jack	25
Jewel	56
Jonquil	13
Juno	6
Laughlin	21
L. & G. Mfg. Co	20
Linden	63
Lustro	29
Matter	27
Melvin	31
Merion	63
Minerva	54
Moose	14
Morton	26
New Castle	29
New Cresta	45
Oak	59
Onyx	32
Opal	32
Palm	29
Palma	54
Pansy	6
Pansy	50
Peerless	44
P-e-e-r-l-e-s-s	2
Penn Treaty	23
Petunia	46
Pisa	54
P. O. P	12
Premier	2
Primrose	46
P. S. & Co	6
Rambler	56
Range	31
Record Charcoal	61
Regent	26
Rieka	45
Royal	63
Saturn	12
Shenango	29
Silverine	12
Somerbrook	35
Somerton	35
Spa	54
St. Louis	36
Sylvania	43
Tulip	13
U. S. Bright	39
Versailles	39
Villette	45
Violet	54
Virginia	43
Washington	41
Wheeling	65
White Rose	23
Woodward	19
Youghiogheny	39

BRIGHT COKE PLATES.

Name.	*Maker.*
Ætna	1
Alba	32
Alba Extra	32
Albert	55
Alcania	43
Almond	63
American	12
American Palm	12
Anderson	27
Apex	6
Ariel	45
Atlanta	3
Baltimore	4
Bond	8
Beaver	5
Bellevue	58
Belona	58
Best Coke	18
B. G	31
Britton	7
Brooklyn	55
Buckeye	7
Cambridge	26
Clover	13
Crane	17
Crescent	10
Delta	45
Elk	14
Ensign	8
Franklin	44
Furnace	49
Gladys	59
Greer	28
Hazen	2
Helena	43
Humbert	16
Imperial	44
Irondale	40
Johnstown	18
J. T. P	18
Kanner	2
Koko	2
Kream	2
La Belle	19
Laughlin	21
L. & G. Mfg. Co	20
Leslie	54
Locust	63
Lorna	32
L-Wood	2
Mifflin	39
Mint	63
Monon	24
National	27
New Castle Palm	28
Oliver (O. H.)	24
Peconic	31
Pennant	8
Penn Treaty	23
Pink	50
Record Coke	61
R. H. J	25
Rose	54
S. J. R	45
Somerton	35
Star	37
Steel Coke	36
Stickney Coke Balto	38
Thayer	63
Thistle	26
Wallflower	43
Walnut	59
Washington	41

TERNE PLATES.

Name.	*Maker.*
Abercarne	23
Acme Old Method	36
Ainacla	43
Alaska	54
Albemarle	58
Alcania	43
Allegheny	49
Allegheny	52
Alta	36
Amber	32
America	60
American Old Style	54
American Standard	26
Amer. M. S	44
Arch	54
Arrow	44
Atlanta	3
Aurora	8
Bala	6
Baltimore	4
Banner	12
Barto	45
Beaver	5
Belmont	1
Belmont Best	1
Belmont Special	1
Black Diamond	44
Blueflower	13
Boaz	62
Bonus	50
Boston	59
Boston Old Method	59
Braddock Old Style	49
Britton	7
Buckeye	7
Cadot's Old Style	53
Camaret	54
Cambria	43
Cambridge New Method	26
Cambridge Old Style	26
C. H	60
Charter Oak	12
Cherokee	58
Chesapeake	58
Clyde	53
Coin Old Method	8
Columba	43
Columbia	31
Columbia	63
Columbus	59
Cornflower	13
Crane	17
Crane Extra Coated	17
Crane Old Style	17
Crescent & Star	10
Crown	6
Crown Old Method	45
Crown Royal	57
Dandy	56
Dawn	8
Defender	32
Demmler Redipped	39
Devon	6
Dover	45
Dover Extra	45
Dover Old Method	45
Drake	14
Duck	14
Duquesne	49
Eagle	39
Echo	56
Economy	26
Eleanor	65
Elsie	54
E-l-w-o-o-d	2
Eminent Old Method	45
Emlyn	54
Empire Hand Coated	54
Ender's Old Style	53
Eureka	53
Excelsior	55
Extra Fine	36
Ferguson's Extra Coated	48
Ferguson's Old Style	48
Ferguson's Redipped	48
Flushing	55
Fort Pitt	50
Freeport	52
F. R. P. Extra	59
F. W. B. Old Style	25
G. A. R	50
Girard	23
Globe	63
Gold Standard	8
Grace	55
Grant	39
Greenbrier	58
Hamilton's Best Redipped	50
Hamilton's Excelsior Hand Coated	50
Hancock	44
Hawthorne	43
Hazlewood	50
Helen	65
Hickory	54
H. M	60
Horse Shoe	44
Horton	60
I. D. B	44
Indian	58
I-n-d-i-a-n-a	2
Iron City	24
Irondale	40
J. D. L	22
J. H. R	25
Juniata	29
Kanawha	58
Kelso	6
Kenton	49
Kensington	32
Keystone	44
Keystone Hand Dipped	44
Killbuck	50
Kismet	54
Knoxall	63
Laufman's Apollo	54
Laughlin	21
L. C	60
Leatherwood	26
L-e-e-d-s	2
Legal Tender Old Process	8
L. & G. Mfg. Co	20
Lima Redipped	48
Lionel	49
Los Angeles	43
Lulu	50
Magnet	48
Mahoning	43
Manchester	24
Maple Old Method	63
Margaret	65
Marshall	23
Mayflower	43
Medal Old Style	8
Merchant's Old Method	54
Merchant's Roofing	54
Merion	6
Meurer's Old Method	55
Meurer's Roofing	55
MF	12
M. F. H	22
M. F. H. Best	22
M. F. H. Extra	22
Mingo	45
Mingo Old Process	50
ML Old Style	8
Mohawk	58
Monogram	12
Monongahela	39
Moonflower	13
Mora	31
Mt. Penn	60
National	59
N. C. T	12
Nelson	65
Neville Old Style	49
New Castle Old Method	29
New Method	57
New South	22
N. F	46
N. & H. Roofing	56
Nivin & Hassard Old Method	56
Norristown	57
Norristown Extra	57
Norristown New Method	57

Norristown Old Style	57
North Star	26
Oakmont	49
Official	13
Old Method	56
Old Reliable Redipped	49
Old Style Oil Finish	6
Optimus	46
Orbit Redipped	49
Orient	8
Orient Crown	6
Orion	6
Osceola Old Style	50
Palm	54
Pawnee	58
Pasadena	43
Pencoyd	45
Penn Treaty	23
Phillips' Roofing	59
Piqua	47
Pittsburgh	49
Plumbum	43
Potomac	58
Potts' A. L. S. Old Style	6
Potts' Old Process	6
Preble Extra	45
Primrosa	43
Protection Old Process	49
P. T. L.	25
P. T. W. Old Fashion	32
Pullman	55
Puritan	44
Quaker City	44
Queen City Old Style	62
Raymond	49
Reading Old Style	60
Reading Roofing	60
R-e-i-d	2
Reinert Redipped	53
Republic	59
Rivanna	58
Riverside	62
Rutter	6
Sanatoga	45
Scott's Extra Coated	49
Sensation	56
S G	36
Sheffield	24
Shenango	29
Sherwood	49
S L S Old Method	36
Soho	24
Special Extra Coated	54
Special Redipped	53
Spring	60
Spruce	63
Standard A1	43
Standard	1
Standard	55
Stanley	54
Starflower	13
Sunflower	19
Superior	55
Supreme	43
Swan	14
Tandem	54
Taylor Old Style	63
Taylor Roofing Tin	63
The J. McD. & Sons' Co. Old Style	53
Thurso	49
Tip Top	52
Triumph	70
Triumph Old Method	49
U. S. Eagle	39
U. S. Grant	39
U. S. Monongahela	39
U. S. Palmetto	39
U. S. Redipped	39
Volcano	48
Washington	41
Washington Old Style	41
Weather-proof	12
West Virginia	19
West Virginia Old Style	19
Wildflower	13
Willow	63
Wylie	65
York	58
Zenith	6
Zero	59

TAGGERS TIN.

Hazen	2
Melba	32

DEALERS' SPECIAL BRANDS.

BRIGHT CHARCOAL PLATES.

Name of Brand.	*Dealer's Name and Address.*
ALICE	Stratton & Terstegge, Louisville, Ky.
ALTAMONT	Lyon, Conklin & Co., Baltimore, Md.
ARCHO	Williams & Co., Columbus, Ohio.
AURORA	W. C. Hopson & Co., Grand Rapids, Mich.
AUSTEN EXTRA	Austen & Doten, Boston, Mass.
BESSIE	McClure & Co., Pittsburgh, Pa.
BEVERLY	Richards & Co., Boston, Mass.
BUCKEYE	W. F. Janeway, Columbus, Ohio.
BURREY	E. L. Parker & Co., Baltimore, Md.
CAMBRIDGE	Cambridge Mfg. Co., Cambridge, Ohio.
CHAMPION, CLIMAX, COLONIAL	Gummey, McFarland & Co., Philadelphia.
CRYSTAL	E. L. Parker & Co., Baltimore, Md.
CUPOLA	McClure & Co., Pittsburgh, Pa.
DAISY	E. E. Souther Iron Co., St. Louis, Mo.
DAISY, DALE	Dickerson, Van Dusen & Co., New York.
DEKALB	Bannantine Galvanized Iron Mfg. Co., St. Louis, Mo.
DESOTO	Simmons Hardware Co., St. Louis, Mo.
DOUGLAS, FALCON, FORD	Dickerson, Van Dusen & Co., New York.
GLEN	W. F. Janeway, Columbus, Ohio.
GOLDEN STAR	J. M. & L. A. Osborn, Cleveland, Ohio.
HERO	Witte Hardware Co., St. Louis, Mo.
HILDA	W. C. Hopson & Co., Grand Rapids, Mich.
HONEY SUCKLE	E. E. Souther Iron Co., St. Louis, Mo.
HUBERT	W. C. Hopson & Co., Grand Rapids, Mich.
INDIA	J. L. Perkins & Co., Chicago.
J. M. & L. A. O. EX. BRIGHT	J. M. & L. A. Osborn, Cleveland, Ohio.
LACLEDE	Simmons Hardware Co., St. Louis, Mo.
LUCILE	W. C. Hopson & Co., Grand Rapids, Mich.
MADRID, MAJOR	Dickerson, Van Dusen & Co., New York.
MAGNOLIA EXTRA	Richards & Co., Boston, Mass.
MARIE	Illinois Roofing & Supply Co., Chicago.
MARS	Gummey, McFarland & Co., Philadelphia.
MAY	J. L. Perkins & Co., Chicago.
MENTOR	J. M. & L. A. Osborn, Cleveland, Ohio.
MILDRED	Lyon, Conklin & Co., Baltimore, Md.
MOHAWK	Hibbard, Spencer, Bartlett & Co., Chicago.
MOLLIE	Illinois Roofing & Supply Co., Chicago.
MORO	Dickerson, Van Dusen & Co., New York.
MYRTLE	J. L. Perkins & Co., Chicago.
NEPTUNE	Gummey, McFarland & Co., Philadelphia.
NETTIE, OLLIE	Illinois Roofing & Supply Co., Chicago.
ONEIDA	Chas. Millar & Son, Utica, N. Y.
OSBORN	J. M. & L. A. Osborn, Cleveland, Ohio.
PARKTON	E. L. Parker & Co., Baltimore, Md.
PATRIOT	Williams & Co., Columbus, Ohio.
PENMAR	E. L. Parker & Co., Baltimore, Md.
PENROSE	C. Sidney Shepard & Co., Chicago.
PHŒNIX	Gummey, McFarland & Co., Philadelphia.
POPLAR	Dickerson, Van Dusen & Co., New York.
RITER'S BRIGHT	Riter Bros. & Co., Philadelphia.
RUSSELL	W. F. Janeway, Columbus, Ohio.
RUTH	McClure & Co., Pittsburgh, Pa
SENECA	Chas. Millar & Son, Utica, N. Y.
SHEPARD'S REDIPPED	Sidney Shepard & Co., Buffalo, N. Y.
SILVER STAR	J. M. & L. A. Osborn, Cleveland, Ohio.
SOULARD	Bannantine Galvanized Iron Mfg. Co., St. Louis, Mo.
STAG	Gummey, McFarland & Co., Philadelphia.
STERLING	McClure & Co, Pittsburgh, Pa.
SUN	Gummey, McFarland & Co., Philadelphia.
THEBA	McClure & Co., Pittsburgh, Pa.
TONQUIN	E. S. Wheeler & Co., New Haven, Conn.
WALTER	Lyon, Conklin & Co., Baltimore, Md.
WITTE HARDWARE CO. I.X.L.	Witte Hardware Co., St. Louis, Mo.
WYETH	Wyeth Hardware Co., St. Joseph, Mo.
YORK	Letcher & Norton, Jersey City, N. J.

BRIGHT COKE PLATES.

ALFRED	J. L. Perkins & Co., Chicago.
ASTOR	McClure & Co., Pittsburgh, Pa.
BEACH	E. L. Parker & Co., Baltimore, Md.
BERTHA	Stratton & Terstegge, Louisville, Ky.
BIRCH	E. L. Parker & Co., Baltimore, Md.
CACTUS	Hibbard, Spencer, Bartlett & Co., Chicago.
CAIRO	E. L. Parker & Co., Baltimore, Md.
CALLA LILY	E. E. Souther Iron Co., St. Louis, Mo.
CAMBRIDGE	Cambridge Mfg. Co., Cambridge, Ohio.
CLOVER LEAF	E. E. Souther Iron Co., St. Louis, Mo.
COKE	Bannantine Galvanized Iron Mfg. Co., St. Louis, Mo.
CORAL	E. L. Parker & Co., Baltimore, Md.
CORNELL, DERBY	Dickerson, Van Dusen & Co., New York.
EDNA	J. L. Perkins & Co., Chicago.
ELM	E. L. Parker & Co., Baltimore, Md.
ELSA	Stratton & Terstegge, Louisville, Ky.
EMERSON	W. F. Janeway, Columbus, Ohio.
EUCLID	J. M. & L. A. Osborn, Cleveland, Ohio.
FERN	E. L. Parker & Co., Baltimore, Md.
FURMSTON	C. Sidney Shepard & Co., Chicago.
GEM, GLEN	Austen & Doten, Boston, Mass.
HANOVER	Dickerson, Van Dusen & Co., New York.
HUBERT	W. C. Hopson & Co., Grand Rapids, Mich.
JOKER	Illinois Roofing & Supply Co., Chicago.
JUNO	Witte Hardware Co., St. Louis, Mo.
LUNAR	E. L. Parker & Co., Baltimore, Md.
MABEL	Stratton & Terstegge, Louisville, Ky.
MIDWAY	McClure & Co., Pittsburgh, Pa.
MONARCH	Dickerson, Van Dusen & Co., New York.
OAK	E. L. Parker & Co., Baltimore, Md.
OLD HUNDRED	Hibbard, Spencer, Bartlett & Co., Chicago.
OZARK	Simmons Hardware Co., St. Louis, Mo.
PINE	E. L. Parker & Co., Baltimore, Md.
POLO	E. L. Parker & Co., Baltimore, Md.
RED, WHITE AND BLUE	Hibbard, Spencer, Bartlett & Co., Chicago.
WASP	E. L. Parker & Co., Baltimore, Md.
WATSON	Dickerson, Van Dusen & Co., New York.
X RAYS	Gedge Bros. Iron Roofing Co., Anderson, Ind.

TERNE PLATES.

ABBEY.....E. L. Parker & Co., Baltimore, Md.
ADMIRAL.....McClure & Co., Pittsburgh, Pa.
ADVANCE.....Stratton & Terstegge, Louisville, Ky.
AJAX.....Witte Hardware Co., St. Louis, Mo.
A. J. T.....Stratton & Terstegge, Louisville, Ky.
ALAMO.....Bruce & Cook, New York.
ALBANY.....Southern Ry. Supply Co., Richmond, Va.
ALDERLY.....Gummey, McFarland & Co., Philadelphia, Pa.
ALINE.....Dickerson, Van Duesen & Co., New York.
A. L. S. NEW METHOD.....W. F. Janeway, Columbus, Ohio.
ALTON.....Richards & Co., Boston, Mass.
AMERICAN EAGLE.....Stratton & Terstegge, Louisville, Ky.
ANCHOR.....Gummey, McFarland & Co., Philadelphia, Pa.
APEX.....Lyon, Conklin & Co., Baltimore, Md.
APEX OLD STYLE.....Richards & Co., Boston, Mass.
AROYA.....J. L. Perkins & Co., Chicago.
ASTORIA.....Dickerson, Van Dusen & Co., New York.
ATLANTIC.....Mortimer H. Cort, New York.
ATLAS.....J. M. & L. A. Osborn, Cleveland, Ohio.
AXMINSTER.....Dickerson, Van Dusen & Co., New York.
BALM'S NEW METHOD.....Illinois Roofing & Supply Co., Chicago.
BANNANTINE'S JUNIATA... / BANNANTINE'S OLD STYLE / BANNANTINE'S REFINED .. / BANNANTINE'S STANDARD } Bannantine Galvanized Iron Mfg. Co., St. Louis, Mo.
B. & W.....Brown & Wales, Boston, Mass.
BECK.....W. C. Nimmo & Co., Baltimore, Md.
BERGEN OLD STYLE.....Letcher & Norton, Jersey City, N. J.
BIGGS OLD METHOD.....J. L. Perkins & Co., Chicago.
BISMARCK.....W. C. Hopson & Co., Grand Rapids, Mich.
BLACK HAWK.....E. E. Souther Iron Co., St. Louis, Mo.
BRATTLE.....Richards & Co., Boston, Mass.
BRIGHTEST AND BEST.....Wyeth Hardware Co., St. Joseph, Mo.
BRUCE'S OLD METHOD..... / BRUCE'S OLD STYLE..... } Bruce & Cook, New York.
B. S. B. REDIPPED.....Williams & Co., Columbus, Ohio.
BUFFALO.....Peden & Co., Houston, Texas
BUFFALO BEST.....Sidney Shepard & Co., Buffalo, N. Y.
BUFFALO OLD STYLE.....E. E. Souther Iron Co., St. Louis, Mo.
CAIRO.....E. L. Parker & Co., Baltimore, Md.
CAMBRIDGE.....Cambridge Mfg. Co., Cambridge, Ohio.
CAPITAL.....E. L. Parker & Co., Baltimore, Md.
CELLO.....Gummey, McFarland & Co., Philadelphia, Pa.
CENTRAL.....A. A. Thomson & Co., New York.
CHALLENGE.....Wells & Nellegar Co., Chicago.
CHEROKEE.....J. L. Perkins & Co., Chicago.
CHERRY.....E. L. Parker & Co., Baltimore, Md.
CHESTER.....E. L. Parker & Co., Baltimore, Md.
CLIMAX.....Gummey, McFarland & Co., Philadelphia, Pa.
CLINTON.....Chas. Millar & Son, Utica, N. Y.
CLINTON.....Dickerson, Van Dusen & Co., New York.
CLOVER LEAF.....Wyeth Hardware Co., St. Joseph, Mo.
C. M. L.....The F. H. Lawson Co., Cincinnati, Ohio.
COE O. S.....James A. Coe & Co., Newark, N. J.
COIN.....W. C. Hopson & Co., Grand Rapids, Mich.
COMPETITION.....Gedge Bros. Iron Roofing Co., Anderson, Ind.
CONKLIN'S OLD STYLE.....Chas. A. Conklin Mfg. Co., Atlanta, Ga.
CONTINENTAL.....Gummey, McFarland & Co., Philadelphia, Pa.
CORT'S EXTRA ROOFING... / CORT'S OLD STYLE..... / CORT'S NEW METHOD..... } Mortimer H. Cort, New York.
COURT OLD STYLE.....J. M. & L. A. Osborn, Cleveland, Ohio.
COWBOY.....Peden & Co., Houston, Texas.
CROWN OLD STYLE.....Illinois Roofing & Supply Co., Chicago.
C. S. R. CO. CANTON..... / C. S. R. CO. FARGO..... } Canton Steel Roofing Co., Canton, Ohio.
CYCLE.....Bruce & Cook, New York.
DAISY.....E. E. Souther Iron Co., St. Louis, Mo.
DALKEITH.....Hibbard, Spencer, Bartlett & Co., Chicago.
DASSO.....Illinois Roofing & Supply Co., Chicago.
DELL.....E. L. Parker & Co., Baltimore, Md.
DELMAR.....Simmons Hardware Co., St. Louis, Mo.
DE MILT'S CHAMPION..... / DE MILT'S FIRST NEW YORK..... / DE MILT'S MANHATTAN... } H. R. De Milt & Co., New York.
DENNIS.....W. F. Janeway, Columbus, Ohio.
DERBY.....E. L. Parker & Co., Baltimore, Md.
DICKERSON, O. S.....Dickerson, Van Dusen & Co., New York.
DIXIE OLD PROCESS.....Chas. A. Conklin Mfg. Co., Atlanta, Ga.
DIXIE OLD PROCESS.....Southern Ry. Supply Co., Richmond, Va.
DOTEN.....Austen & Doten, Boston, Mass.
EAGLE.....Gummey, McFarland & Co., Philadelphia, Pa.
EARNEST.....T. B. Coddington & Co., New York.
EASTLAKE.....J. L. Perkins & Co., Chicago.
ECONOMY.....Simmons Hardware Co., St. Louis, Mo.
E / L } Hoy & Co., Albany, N. Y.
E. L.....Illinois Roofing & Supply Co., Chicago.
ELECTRIC CITY.....Wyeth Hardware Co., St. Joseph, Mo.
ELI.....Illinois Roofing & Supply Co., Chicago.
ELK.....Riter Bros. & Co., Philadelphia.
ELKIN.....Lyon, Conklin & Co., Baltimore, Md.
ELLIS.....Bruce & Cook, New York.
ELMO.....Chas. A. Conklin Mfg. Co., Atlanta, Ga.
EMORY.....W. F. Janeway, Columbus, Ohio.
EMPIRE STATE.....Mortimer H. Cort, New York.
EPTOL.....McClure & Co., Pittsburgh, Pa.
ERIE.....Letcher & Norton, Jersey City, N. J.
EUREKA.....J. M. & L. A. Osborn, Cleveland, Ohio.
FENTON.....The F. H. Lawson Co., Cincinnati, Ohio.
F. H. L.....The F. H. Lawson Co., Cincinnati. Ohio.
FLAG.....Gummey, McFarland & Co., Philadelphia, Pa.
F. M. S.....Stratton & Terstegge, Louisville, Ky.
FOREST.....Letcher & Norton, Jersey City, N. J.
FRANKLIN.....Peden & Co., Houston, Texas.
FRANKLIN NEW METHOD....W. F. Janeway, Columbus, Ohio.
FREEHOLD.....McClure & Co., Pittsburgh, Pa.
F. R. L. OLD METHOD.....The F. H. Lawson Co., Cincinnati, Ohio.
FULTON.....Dickerson, Van Dusen & Co., New York.
FULTON.....E. L. Parker & Co., Baltimore, Md.
FURMSTON.....C. Sidney Shepard & Co., Chicago.
GARLAND OLD STYLE.....McClure & Co, Pittsburgh, Pa.
GEDGE CROSS..... / GEDGE REDIPPED..... } Gedge Bros. Iron Roofing Co., Anderson, Ind.
GENUINE L. C. Co.'s REDIPPED..... } Lyon, Conklin & Co., Baltimore, Md.
GLEN.....Chas. A. Conklin Mfg. Co., Atlanta, Ga.
GLENDALE.....Lyon, Conklin & Co., Baltimore, Md.
GOLDEN STAR OLD STYLE...J. M. & L. A. Osborn, Cleveland, Ohio.
GROVE.....Letcher & Norton, Jersey City, N. J.
GUMMEY'S ROOFING.....Gummey, McFarland & Co., Phila.
HANDCO.....Hoy & Co., Albany, N. Y.
HAROLD.....Dickerson, Van Dusen & Co., New York.
HAROLD NEW METHOD.....W. F. Janeway, Columbus, Ohio.
HARVARD.....Austen & Doten, Boston, Mass.
H. B. L. OLD STYLE.....Hibbard, Spencer, Bartlett & Co, Chicago.
HERCULES.....Gummey, McFarland & Co., Philadelphia, Pa.
HERCULES.....Witte Hardware Co., St. Louis, Mo.
HOUSTON.....Peden & Co., Houston, Texas.
HUDSON NEW METHOD.....Letcher & Norton, Jersey City, N. J.
HUNTER.....Lyon, Conklin & Co., Baltimore, Md.
HUSTLER.....Illinois Roofing & Supply Co., Chicago.
IATAN.....J. L. Perkins & Co., Chicago.
IDEAL.....E. L. Parker & Co., Baltimore, Md.
ILLINOIS OLD METHOD.....Idinois Roofing & Supply Co., Chicago.
IRON OLD WAY.....Lyon, Conklin & Co., Baltimore, Md.
IROQUOIS.....Hibbard, Spencer, Bartlett & Co., Chicago.
IVY.....Chas. A. Conklin Mfg. Co., Atlanta, Ga.
I. X. L. OLD METHOD.....Witte Hardware Co., St. Louis, Mo.
JAY.....J. L. Perkins & Co., Chicago.
JERSEY OLD STYLE.....J. L. Perkins & Co., Chicago.
JESS.....J. L. Perkins & Co., Chicago.
JESSIE.....Illinois Roofing & Supply Co., Chicago.
J. R. D. EXTRA.....J. L. Perkins & Co., Chicago.
JUNIATA.....Bannantine Galvanized Iron Mfg. Co., St. Louis, Mo.
JUPITER.....Simmons Hardware Co., St. Louis, Mo.
KENWOOD.....C. Sidney Shepard & Co., Chicago.
KEYSTONE.....McClure & Co., Pittsburgh, Pa.
KLONDIKE.....Peden & Co., Houston, Texas.
KRONER'S BEST.....La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
LAUREL.....E. L. Parker & Co., Baltimore, Md.
LAWSON OLD PROCESS.....The F. H. Lawson Co., Cincinnati, Ohio.
LEADER.....The F. H. Lawson Co., Cincinnati, Ohio.
LEADER..... / LEDGER..... } E. L. Parker & Co., Baltimore, Md.
LEHIGH.....Riter Bros. & Co., Philadelphia, Pa.
LEOMINSTER.....Gummey, McFarland & Co., Philadelphia, Pa.
LEONA OLD STYLE.....J. L. Perkins & Co., Chicago.
LIBERTY.....Gummey, McFarland & Co., Philadelphia, Pa.
LILLIAN.....W. C. Nimmo & Co., Baltimore, Md.
LOWERY.....W. F. Janeway, Columbus, Ohio.
LURAY SPECIAL.....E. L. Parker & Co., Baltimore, Md.
LYON HAND COATED.....Lyon, Conklin & Co., Baltimore, Md.
MAGNOLIA.....Peden & Co., Houston, Texas.
MASCOTTE.....Stratton & Terstegge, Louisville, Ky.

McClure's Redipped	McClure & Co., Pittsburgh, Pa.
McClure's Roofing	
M. F. G.	The F. H. Lawson Co., Cincinnati, Ohio.
Model Extra	E. L. Parker & Co., Baltimore, Md.
Modox	Lyon, Conklin & Co., Baltimore, Md.
Morgan	E. S. Wheeler & Co., New Haven, Conn.
Morgan Old Method	Letcher & Norton, Jersey City, N. J.
Morita	J. L. Perkins & Co., Chicago.
Morris Old Style	Gummey, McFarland & Co., Philadelphia, Pa.
Nava	J. M. & L. A. Osborn, Cleveland, Ohio.
Niagara	Hibbard, Spencer, Bartlett & Co., Chicago.
Nimmo Extra Coated	W. C. Nimmo & Co., Baltimore, Md.
Nimmo Old Style	
O. B. T. Extra Coated	McClure & Co., Pittsburgh, Pa
Ocracoke	Southern Ry. Supply Co, Richmond, Va.
Ohio	The F. H. Lawson Co., Cincinnati, Ohio.
Old Colony	A. A. Thomson & Co, New York.
Old Process	Hibbard, Spencer, Bartlett & Co., Chicago.
Old Style	J. M. & L. A. Osborn, Cleveland, Ohio.
Old Style P	The F. H. Lawson Co., Cincinnati, Ohio.
Old Time	Stratton & Terstegge, Louisville, Ky.
Olney	Brown & Wales, Boston, Mass.
Oriole	E. L. Parker & Co., Baltimore, Md.
Osborn Guaranteed Old Style	J. M. & L. A. Osborn, Cleveland, Ohio.
Osborn's Old Method	
Osborn's Old Style Ponty	
Osborn Roofing	
Papoose	E. E. Souther Iron Co, St. Louis, Mo.
Parker's Old Style	E. L. Parker & Co., Baltimore, Md.
Parker's Triple Coated	
Pavonia	Letcher & Norton, Jersey City, N. J.
P. B. H.	Bruce & Cook, New York.
Pecos	J. L. Perkins & Co., Chicago.
P. E. D. Old Style	J. L. Perkins & Co., Chicago.
Peden's Old Style	Peden & Co., Houston, Texas.
Penn Old Method	Gummey, McFarland & Co., Philadelphia, Pa.
Pennsyl Old Method	
Perfection	E. L. Parker & Co., Baltimore, Md.
Petrel	Bruce & Cook, New York.
Phelps' Extra	Phelps, Dodge & Co., New York.
Phelps' Treble Coated	
Phœnix	Gummey, McFarland & Co., Philadelphia, Pa.
Piedmont	Chas. A. Conklin Mfg. Co., Atlanta, Ga.
Pioneer	Gummey, McFarland & Co., Philadelphia, Pa.
Pilgrim Old Style	E. S. Wheeler & Co., New Haven, Conn.
Plymouth	Austen & Doten, Boston, Mass.
P. N. A. Treble Coated	Bruce & Cook, New York.
Pontartawe	Hibbard, Spencer, Bartlett & Co., Chicago.
Pony	E. E. Souther Iron Co., St. Louis, Mo.
Premier	E. L. Parker & Co., Baltimore, Md.
P. R. P. Redipped	Williams & Co., Columbus, Ohio.
Pyote	J. L. Perkins & Co., Chicago.
Quincy	Richards & Co., Boston, Mass.
Ray	Illinois Roofing & Supply Co., Chicago.
Refined	Bannantine Galvanized Iron Mfg. Co., St. Louis Mo.
Reno	Mortimer H. Cort, New York.
Richards' New Method	Richards & Co., Boston, Mass.
Riter's Extra	Riter Bros. & Co., Philadelphia, Pa.
Riter's Guaranteed Hand Dipped	
Riter's Roofing	
Riter's Special	
Rogers	The F. H. Lawson Co., Cincinnati, O.
Rosedale	W. C. Nimmo & Co., Baltimore, Md.
Salem	E. L. Parker & Co., Baltimore, Md.
Sandow Old Style	W. C. Nimmo & Co., Baltimore, Md.
Selaw	Brown & Wales, Boston, Mass.
Senate	E. L. Parker & Co., Baltimore, Md.
Seneca	Chas. Millar & Son, Utica, N. Y.
Severn	E. L. Parker & Co., Baltimore, Md.
Seneca	Sidney Shepard & Co., Buffalo, N. Y.
Shepard's Old Style	
Sherman	E. S. Wheeler & Co., New Haven, Conn.
Sherman Old Style	
Southern Cross	Southern Ry. Supply Co., Richmond, Va.
Spalding	Illinois Roofing & Supply Co., Chicago.
Special	Gedge Bros. Iron Roofing Co., Anderson, Ind.
Spokane	Stratton & Terstegge, Louisville, Ky.
Squaw	E. E. Souther Iron Co., St. Louis, Mo.
S. & T. Extra Coated	Stratton & Terstegge, Louisville, Ky.
S. & T. Old Method	
S. & T. Old Time	
Stafford	E. L. Parker & Co., Baltimore, Md.
Standard	Bannantine Galvanized Iron Mfg. Co., St. Louis, Mo.
Standard	E. L. Parker & Co., Baltimore, Md.
Staple	James A. Coe & Co., Newark, N. J.
Star Old Style	J. M. & L. A. Osborn, Cleveland, Ohio.
Stella O. S.	Dickerson, Van Dusen & Co., New York.
Stellar	E. L. Parker & Co., Baltimore, Md.
Sterling	Richards & Co., Boston, Mass.
Sterling Old Style	Gummey, McFarland & Co, Philadelphia, Pa.
Superior New Method	W. C. Hopson & Co., Grand Rapids, Mich.
Swan	Sidney Shepard & Co., Buffalo, N. Y.
Telnar	Richards & Co., Boston, Mass.
Thomson's Puritan	A. A. Thomson & Co., New York.
Thrift	W. C. Hopson & Co., Grand Rapids, Mich.
Tomahawk	E. E. Souther Iron Co., St. Louis, Mo.
Toyah	J. L. Perkins & Co., Chicago.
Tuxedo	W. C. Nimmo & Co., Baltimore, Md.
Venus	Gummey, McFarland & Co., Philadelphia, Pa.
Victor	
Victory Old Style	Chas. Millar & Son, Utica, N. Y.
Viola	Peden & Co., Houston, Texas.
Wabash	E. L. Parker & Co., Baltimore, Md.
Waldo	Gummey, McFarland & Co., Philadelphia, Pa
Wales Special	Brown & Wales, Boston, Mass.
Walkill	Chas. Millar & Son, Utica, N. Y.
Warsaw	E. L. Parker & Co., Baltimore, Md.
Wayne Hand Coated	Lyon, Conklin & Co., Baltimore, Md.
Westminster	Dickerson, Van Dusen & Co., New York.
Westmoreland	C. Sidney Shepard & Co., Chicago.
W. & H. Redipped	Williams & Co., Columbus, Ohio.
Wheeler's Improved Method	E. S. Wheeler & Co., New Haven, Conn.
Williams Old Style	Williams & Co., Columbus, Ohio.
Wilton Extra	Stratton & Terstegge, Louisville, Ky.
W. L. L.	Lyon, Conklin & Co., Baltimore, Md.
W. T. R.	Bruce & Cook, New York.
Wyeth Old Style	Wyeth Hardware Co., St. Joseph, Mo.
X. L. C. R	Gummey, McFarland & Co., Philadelphia, Pa.
Yale	E. L. Parker & Co., Baltimore, Md.
Yankee	Dickerson, Van Dusen & Co., New York.
York	Letcher & Norton, Jersey City, N. J.
York	Riter Bros. & Co., Philadelphia, Pa.
Zone	Gummey, McFarland & Co., Philadelphia, Pa.

SCRAP.

The Norton Tin Plate & Can Company of Baltimore, Md., have established their offices in commodious quarters in the Chamber of Commerce Building, Baltimore.

The Humbert Tin Plate Company, South Connellsville, Pa., are putting in two additional hot mills, making their works a six-mill plant. Two new tinning sets are also being installed.

Frank Bond of the Tin Plate manufacturing firm of E. Morewood & Co. of Llanelly and Swansea, Wales, is now in this country on a visit. Mr. Bond, who was in charge of the Morewood Tin Plate dipping works, at Elizabethport, N. J., until the plant was closed down four years ago, is well known on this side of the water. He frankly admits that the Tin Plate market in the United States is practically lost to Wales. His own company, one of the largest in the business, has, he says, only about one customer left in this country—namely, the Standard Oil Company.

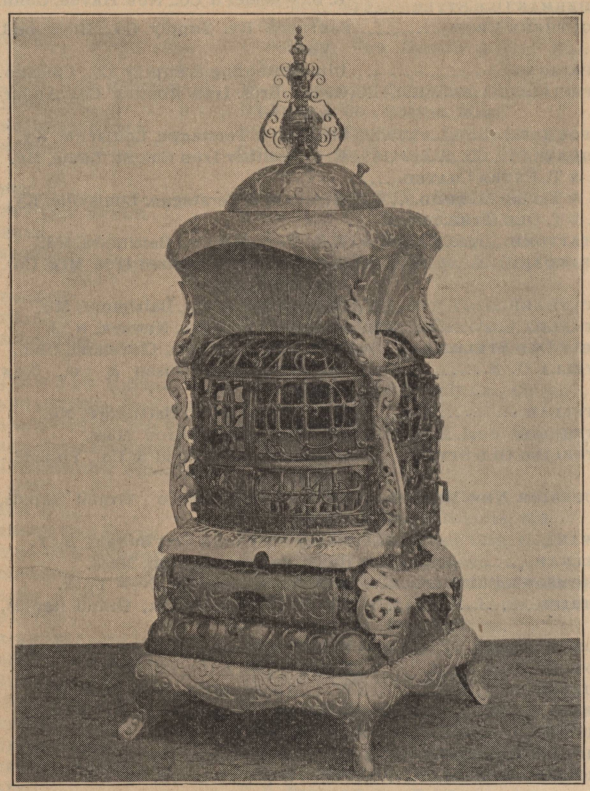
The Manufacturers' Association of Kansas City, United States of America, is the name of a new organization which has made application for a charter, and which will devote its energies toward advancing the interests of manufacturers already located in Kansas City, Mo., and encouraging the location of all kinds of factories. This association has been contemplated for some time, and a good deal of quiet work has been done along the lines necessary to make it a success, and as the leading manufacturers have already taken hold, and a good many of the smaller ones, it will, it is hoped, not take long to make it a strong organization.

The Standard Iron Works of San Diego, Cal., have just completed a new foundry.

NEW STOVES FOR 1898.

SOME NEW BUCKS.

Buck's Stove & Range Company, St. Louis, have added a number of new patterns to their already ex-



Some New Bucks.—Fig. 1—Buck's Radiant.

tensive line. Some two years since they constructed an entirely new line of cooking stoves, discarding all the patterns then in use. During the past two years

Fig. 2.—Buck's Carbon.

they have practically made a new heating line, a few of which are here shown.

Buck's Radiant, Fig. 1, is a strictly high grade base burner. It is finished in duplex and satin finished nickel plate, and with ordinary care the makers claim it will retain its brilliancy for years. This stove is provided with an extra large magazine, giving a large capacity for coal. It has combination duplex and anti-clinker grate. The nickled parts are many, giving the stove a very handsome appearance.

Buck's Carbon, shown in Fig. 2, is a new addition to Buck's heating line, and is a new departure in oak stove construction for the burning of coal or coke. It is a quick heater, has immense coal capacity, and is air tight, and has heavy fire pot linings above the fire pot to protect the sheet iron body. This stove has Buck's patent cone and draw center grate, a new idea

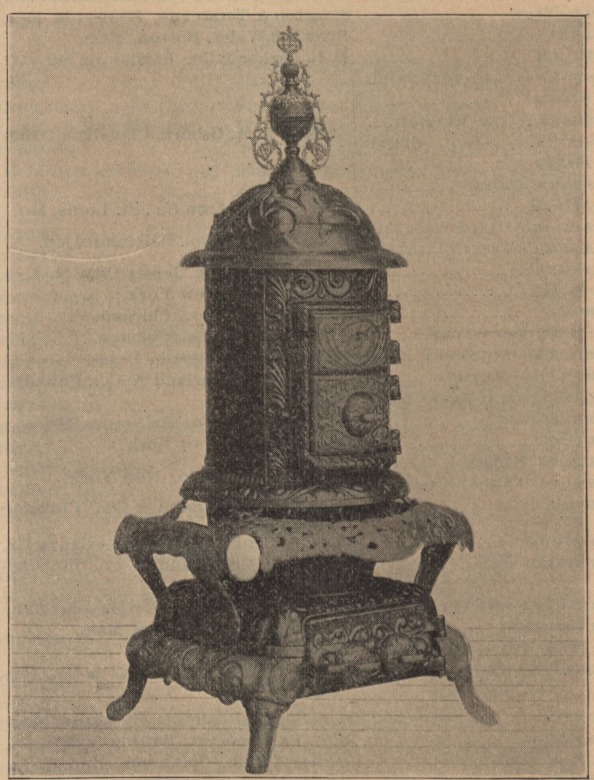


Fig. 3.—Buck's Oak.

of hot air blast, insuring perfect combustion and making it an almost smokeless stove. It has nickeled top ring, front door panel, air tight screw dampers, rails and is surmounted with a handsome urn.

Buck's Oak, shown in Fig. 3, is claimed to be absolutely air tight. It is made under a patented process by which the entire base is made in one jointless piece, insuring the perfect control of the fire. The bottom door is fitted on ground joints, and has screw register dampers with ground joints. The upper and lower feed doors are perfectly fitted with screw register dampers and feed door also contains a smoke curtain. The steel drum section is fastened in an improved manner that protects it from the fire and prevents buckling of the drum. It also has jointless air tight bottom, air tight doors and air tight screw dampers, patented cone grate, shaking and draw center improved for 1898. The nickeled work is referred to as being duplex and satin finish.

SOME NEW ROUND OAKS.

The Estate of P. D. Beckwith, proprietors of the Round Oak Stove Works, Dowagiac, Mich., have made some additions to their line of heaters as well as incorporated improvements in some of their older patterns. In Fig. 1 of the accompanying illustrations we present a general view of the Round Oak in its new dress for

1898. Constructively the heater is the same as heretofore, but without the ash pan and the air tight feature.

Some New Round Oaks.—Fig. 1.—*Round Oak for* 1898.

Instead the company have added the hot blast feature, taking the air in at the draft in the feed door and dis-

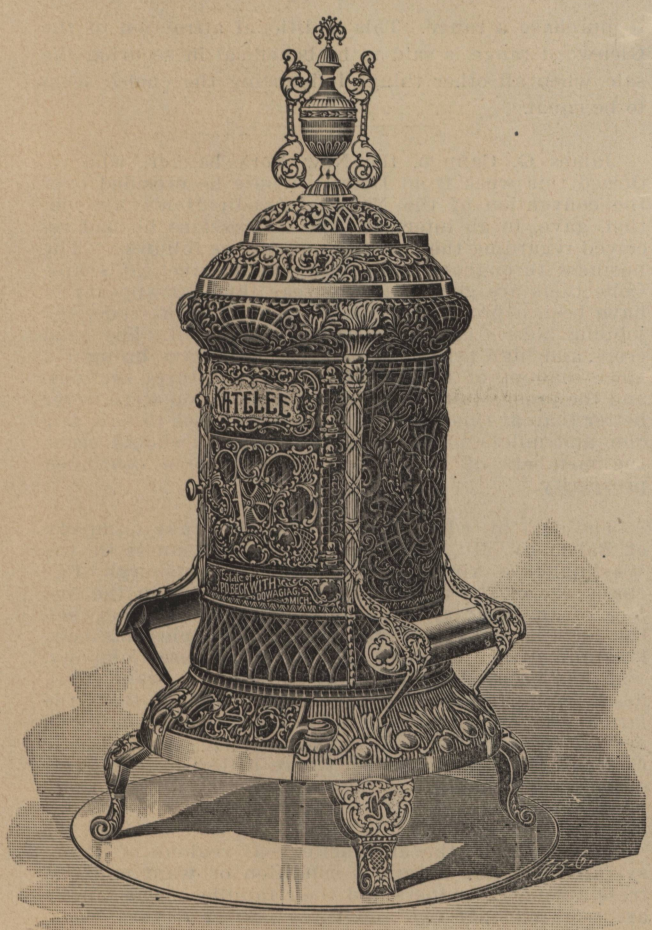


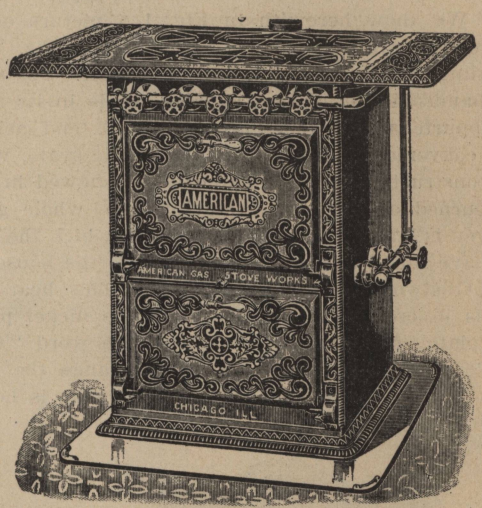
Fig. 2 —*The New Katelee.*

charging it equally over the top of the fire, thus creating, it is claimed, perfect combustion. The manufacturers state that they experimented with this a great deal and have used it in their furnace for a couple of years, finding it eminently successful.

The stove shown in Fig. 2 of the illustrations is the company's New Katelee, which is referred to as a round oak with ornamental casing. It differs from the ordinary air tight stoves in that it has a very much larger fire pot than most stoves of this kind. The entire inner part is a round oak having the air blast, the only difference, as stated above, being the ornamental jacket. It has nickel plated trimmings, foot rails, swing top, &c., together with four torches extending up and down the sides, one of these being clearly shown in the engraving. The stove is made in two sizes, Nos. 16 and 18, and is said to combine the excellent qualities of the round oak with an ornamental exterior. As the manufacturers put it, it has been gotten up regardless of expense and it is confidently expected to prove very popular with the trade.

THE AMERICAN GAS RANGE.

An illustration is herewith given of a new gas range brought out for this season by the American Gas Stove Works, O. C. Mohl, proprietor, 89 and 91 Indiana street, Chicago. This gas range is handsomely designed and has been carefully constructed so as to secure the best possible results with an economical consumption of fuel. The stoves manufactured by this establishment have gained a high standing in the trade by reason of their



The American Gas Range.

merits, and it is expected that the range now brought out will add considerably to the reputation thus far acquired.

The burners used are large one-piece cored burners, 4½ inches in diameter, with a large combustion chamber and sawed slots. An increased spread of flame is thus obtained under the cooking utensils, without increasing the amount of gas consumed. This burner, having a large open center, allows an increased supply of air to the center of the flame, producing greatly augmented heat. It is also obvious that this mode of construction does away with loose caps. Yet the burners can be instantly removed for cleaning purposes. The needle valves are of the most improved construction, with adjustable air mixers of the latest design. These ranges are made with or without double burners, in black or nickel finish.

The construction of the oven is such that the heat from the burners is evenly distributed to all its parts. This is accomplished by conducting the heat through flues directly to the top of the oven. The heated air then circulates in and around the interior, passing out at the bottom, whence it rises through the rear flue, before escaping into the flue pipe. Thus the entire oven is surrounded by the hot air which must all pass over the oven. This indirect circulation of heat insures the most perfect results in all kinds of baking and roasting with the utmost economy in the use of fuel. The oven bottom

is made double by the addition of an extra heavy plate of sheet steel. The oven also has removable sides and back flue lining.

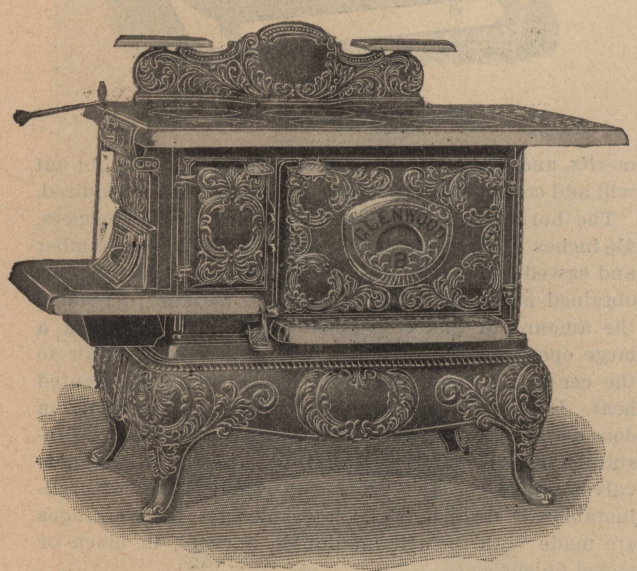
All ranges are equipped with automatically balanced oven drop doors, counterbalanced by powerful coiled springs, operated by compound levers, the springs being protected from heat and moisture. The doors are all lined with sheet steel.

The American Gas Stove Works have always adhered to a simple construction of their ranges, doing away with all unnecessary complications, thereby making the ranges easily and readily accessible for the purpose of keeping them clean and in good working condition.

The American Gas Stove Works are also calling attention to their American Hot Plate. It is equipped with sawed burners, 4½ inches in diameter, doing as quick work as any large range made. The Hot Plate is designed to meet the requirements of those who have not the room for a range or for other reasons prefer not to purchase cooking apparatus requiring a permanent connection. The American Hot Plate is adapted for those who wish to secure practically as good service as with a range.

THE GLENWOOD B RANGES.

The merits of the Glenwood B ranges for a leading line are being brought to the notice of the trade by the manufacturers, the Weir Stove Company, Taunton, Mass. We show herewith in Fig. 1 a picture of the Glenwood B range in square form, and in Fig. 2 the same range with a reservoir and high shelf. The range is of handsome design, and is high grade in its finish and appurtenances. It is provided with end ash pit and a convenient ash pan with the Magic grate, which is so constructed that any bar can be renewed in case it is burned out without removing the whole grate. The oven is large, and a special feature which the company have found of great convenience to the housewife is the Glenwood oven heat indicator. This heat indicator is in crescent form, placed in the nickel plated name plate of the range just under the word "Glenwood." When there is no fire in the range the hand of the indicator is at zero, but as the range is heated



The Glenwood B Ranges.—Fig. 1.—The Square Range.

up the hand moves and records not only the temperature of the oven but also points to the words above the various temperatures, which enables the operator to know that the oven is prepared to bake sponge cake, plain cake, pies, bread and do roasting and for biscuits. It is pointed out that instead of putting food into the oven to be cooked before the oven is at the right temperature, which will result unsatisfactorily, the cook only has to watch the indicator to avoid such mistakes. The most expert cook when in a hurry and the fire is slow is apt to put food into the oven before it is ready, and those who have used the oven indicator have found it to be of dicided advantage. The company advise those who make a specialty of high grade ranges to look into the value of the heat indicator and to thoroughly explain its usefulness to those who are about

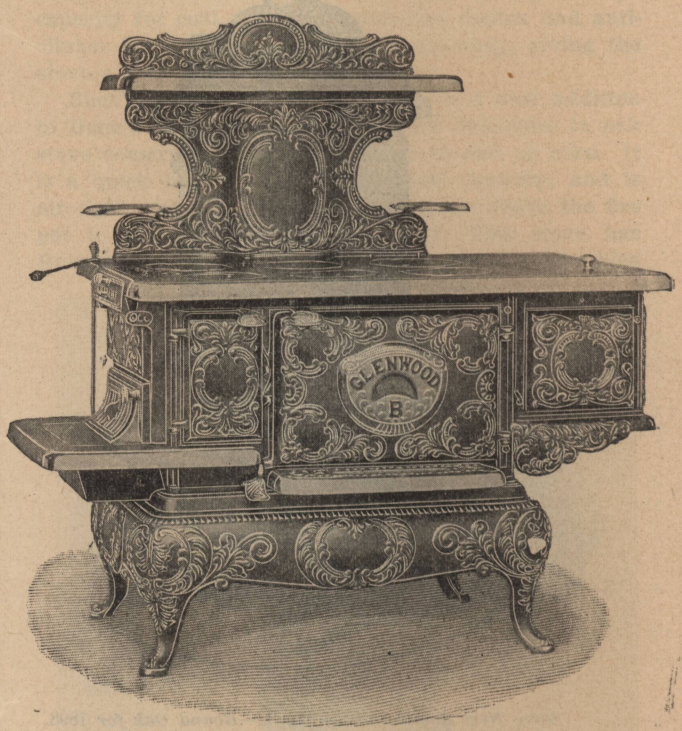


Fig. 2.—The Range with Reservoir and High Shelf.

to purchase a range. This additional attraction of the Glenwood range is said to be beneficial in securing the sale when all other things influencing the choice seem to be equal.

James G. Cannon, the New York banker, who returned this week from Detroit, where he presided over the convention of the National Credit Men's Association, gave, in an interview, the impressions he had received regarding the business outlook, as follows: "The business throughout the country is in excellent shape. Collections are good, and the year thus far appears to have been a prosperous one in most lines of trade, the jobbing houses especially having done well. The good crops and high prices realized last year have brought a large amount of money into the agricultural sections, and the prospects for the coming wheat crop were never better than at this time. The price promises to be a fair one, and unless some unfavorable change should occur the members of the association anticipate continued prosperity."

The deal by which the Boyden Air Brake Company of Baltimore, Md., have sold out their business to the Westinghouse Air Brake Company of Pittsburgh, Pa., closes one of the most notable patent cases in the history of the country. The fight in the Courts between the Boyden and the Westinghouse companies has been long and hotly contested. The Westinghouse Company, who had enjoyed a monopoly of the air brake business before the Boyden invention, claimed that the latter was an infringement on their patent on quick acting brakes. The case was taken to the Supreme Court of the United States, where a decision was rendered recently upholding the claims of the Boyden Company.

Reports from the anthracite coal regions of Pennsylvania describe a serious condition of want and distress among the miners and their families. The miners are working only two and three-quarter days a week, and the workers cannot earn enough to buy the necessaries of life. The reason given is the increasing use of bituminous coal where hard coal was used before in manufacturing plants, railroads and other concerns requiring steam power. Even the locomotives which draw the anthracite fuel from the mines to the seaboard are using soft coal on account of its cheaper price.

STOVE TRADE NOTES.

PHILADELPHIA STOVE TRADE.

The usual midsummer dullness is pervading the stove trade of Philadelphia and district, and founders are devoting their energies to preparations for the season about to open. Salesmen are getting pretty well through with their preliminary trips, and their reports as to the prospects for a good season's business are, on the whole, encouraging.

As in other lines, the war is responsible for the postponement of a good many orders from the larger buyers which generally make an appearance at this time, and for a curtailment in others already booked. No particular reason is assigned for this course—indeed none exists, beyond perhaps a slight feeling of unrest due to the war feeling, and which is supposedly mitigated somewhat by precautions against incurring liabilities to mature in the near future. It is not to be imagined for one moment that the hesitancy is due to the fact that a spirit of enterprise is no longer a feature in the stove dealer's business. The war coming at the end of a prolonged depression has acted as a damper on the courage of those who would have anticipated to an extent the requirements of a season's business. In view of the bountiful harvest with which we seem likely to be favored, the vastly better condition of the farming and industrial classes, the enormous amount of money being expended among us to supply Governmental needs, and of a possible advance in the price of stoves of all kinds there would seem to be every inducement to place orders early. With money circulating freely and consumers of stoves better able to satisfy their needs it is well within the bounds of reason to expect a larger volume of business in the stove trade this fall than has been enjoyed for some years.

Makers are not running their foundries very heavily, about three days a week being the average, and sufficient to keep the finishing departments active. New goods are beginning to make their appearance, but it is not likely that they will be very largely in evidence this season, more attention having been given to redressings. The new goods on the market so far consist chiefly of extended lines of ranges.

MOVEMENT TO ADVANCE PRICES.

There appears to be a movement on the part of the Eastern association in the direction of an advance in prices; in fact some action has already been taken in the matter, and the manufacturers of districts contiguous to the territory covered by the association are, it is reported, being approached with a view to making an advance general. The Western association has already taken a decisive step toward establishing higher prices, and there is every probability of an understanding covering an advance in prices in the Eastern markets being effected before the season has reached its hight.

The furnace trade is fairly active, and prospects are bright. The rumor that the makers in the Philadelphia district are to enter into a consolidation similar to that effected by certain manufacturers in New York State recently appears to be groundless. An arrangement of this kind to include all or even the most prominent makers is not thought to be possible. A few years ago a movement with that end in view was started, and some of the legal requirements completed, but one of the largest manufacturing concerns absolutely refused to enter into the scheme, and the matter fell through. As the same concern are still opposed to an arrangement of the kind, the idea is not likely to be revived.

GAS RANGES AND THE DEPARTMENT STORE.

Trade in summer goods has not been at all up to the mark. The cool weather which existed until quite recently was detrimental to sales of this class of goods. Philadelphia dealers have been somewhat chagrined at the action of the United Gas Improvement Company in seeking to divert the trade in gas ranges to such houses as handle certain makes of ranges. These ranges the company offer to connect without charge in houses along the lines of their mains. The ranges approved of are handled by a leading department store, and the store advertisements in the daily papers have embodied some glaring announcements of the fact that gas ranges sold at the store would be connected free of cost. The bait took, and as only one or two dealers in the city had ranges of the prescribed makes very little business has been done through general stove trade channels. Oil stoves have been in better demand during the past week or two, but there is little demand for cheap gasoline stoves, sales of such goods being mostly confined to the higher grades.

ADVANCING STOVE PRICES.

The necessity of securing better prices has deeply impressed the stove manufacturers, says *The Iron Age*, and they are now working resolutely to that end. The movement was inaugurated by the National Association of Stove Manufacturers at their annual convention, held in Philadelphia, early in May. A resolution was then adopted recommending an advance in prices "to the extent of covering the existing deficits therein and the securing of reasonable profits above cost." That this was not a mere perfunctory resolution, but that it was based on the actual necessity for early relief form harassing conditions, is shown by the statements made by prominent manufacturers that they were in favor of a general shut down by all stove foundries for at least 60 days in the hope that a better level of prices could then be established. Action of this kind was not deemed practicable, however, and other methods were resolved upon. Since the adjournment of the convention local meetings of stove manufacturers have been held in various parts of the country, and an almost universal sentiment in favor of advancing prices has developed.

The most important meeting was probably that held in Chicago last week, at which over 90 per cent. of the stove business transacted west of Pennsylvania and north of the Ohio River was represented. The deliberations lasted through two days, and while an overwhelming preponderance favored an advance in prices on July 1, the desire to secure perfect unanimity made the fixing of a later date desirable, and September 1 was agreed upon. The percentage of advance will be decided later, depending upon conditions which may develop during the summer. It is possible that quite a substantial advance may be justified. Care is being taken to guard against sales of stoves for shipment after August 31 without the addition of the advance.

The action taken at Chicago is expected to be fortified by metings of stove manufacturers in the South and East, as all sections have suffered from the prevalence of unduly low prices.

This attempt to bring about a better state of affairs in the stove trade will be watched with interest by

manufacturers in other branches of the iron and steel trade. The stove manufacturers have had plenty of company in their efforts to secure trade by reducing prices. The results have been very discouraging, not to say embarrassing, and some relief from the grinding pressure of selling prices directly on costs will be gladly welcomed. If the stove manufacturers can work a reform in prices, others can do so fully as well. The better times now prevailing should surely be of some little advantage to manufacturers. But it is apparent that they cannot advance prices without an understanding with their competitors. Iron and steel fall of their own weight, but the application of some sort of power is necessary to advance them.

A Salesman's Views on the Southern Stove Trade.

We take pleasure this week in laying before our readers another series of questions presented by a leading Eastern concern to one of their traveling salesmen, together with the salesman's answers:

Give us your idea of Southern trade.

After three full trips over my Southern field, and extra trips through North Carolina and Virginia, during the past 15 months, and from such information as I could obtain from the trade there and my personal information, I will attempt to give my idea of the situation. I consider our trade to be in a good condition, comprising with few exceptions the best dealers in the sections. The condition of local resources South has not been as bright as we might have wished it, but a brighter outlook seems to be coming. The manner of doing business there is quite different from what it is here, long time and low prices being the dominating features. My last trip has been the best so far in this field, because I have become personally acquainted with the trade and by close study and observation have learned their needs and cater to them. In this way I may have lessened the profits, but increased the production of the goods, or you may say the demand for them. I consider our chances very much better than they were 15 months ago. I have been able to retain all the trade held by my predecessors, and have secured several very good customers, who are buying a much better grade of goods than they formerly carried in stock. Our sales as a whole are showing a good increase over former years in high class goods.

Is the class of goods South improving or lowering in standard?

This is a question that I would divide into two parts or divisions: 1, There are goods made by local or nearby foundries which are anything but improvements. This class of goods is sold to and consumed almost entirely by the negro population, and any kind of finish will answer—sand on castings, poorly fitted, rough and in some cases crooked cross pieces and centers. 2, There are the Middle, Western and Eastern foundry products. These goods are carried by the best dealers and sold to the best class of trade, and generally are educating both dealer and customer to a higher standard. The goods are made by live, up to date and progressive foundries, embody modern designs, up to the top notch improvements, and are of attractive appearance. The demand for cheaper goods of either class, however, will always exist.

Will the development of iron, coal, &c., South, benefit Northern foundries?

From personal observation I cannot see how it will benefit Northern foundries to any extent. In fact, I think the effect will be the other way. The cost of transportation of raw materials North and then reshipping the finished product South must necessarily add to the cost of production. Again, there must be considered our skilled labor and short hours against foundries located directly in or adjacent to this field, where raw material can be transported from furnace to cupola in wagons, where labor is cheap and hours long, and little attention is given to finish and design, and little spent on new patterns. This leaves a large balance in favor of our competitors—the Southern foundries.

Are Northern goods increasing or lessening in sales in the South?

In my opinion Northern goods as a whole are lessening in sales year by year, and are only held where they are by former trade, and by reputation, very few new customers being made. Children grow up, marry and want a stove like their parents. This creates a demand for them, and many dealers are compelled to handle some of these makes. In the meantime, however, they are selling more to some other customers. This is general all over the country. Thanks to our line of goods, however, we have a larger percentage of new trade to-day than any foundry in proportion to the amount of business we do in this field. Some foundries are slowly grasping the needs of this class of trade. Would you send a friend in Florida a Klondike suit? No. You wish a cook stove built for Northern trade, where coal is almost exclusively used, to answer in a community where wood is the only fuel, by merely changing the grate. A customer who is shown a stove will tell you right away that the stove was built for coal. This did answer once upon a time, but, like many other things, times have changed them. Even Southern foundries are grasping this condition of affairs and are putting out new lines to meet this demand.

Will selling expenses at the South keep at their present percentage, or will they be lower as time rolls on?

I do not think it possible for them to become lower than at present. As the percentage of profit lowers the expense must be proportionately higher, unless we can increase our sales to a large amount, which we are trying to do to overcome this loss of profit.

Is the Southern customer harder to sell than a Northern one?

Yes; most emphatically yes. In that part of the North where I call on the trade I rarely have to state what the price is—only present the goods to their best advantage and compare them size for size, finish for finish, &c., with a similar class of goods of our competitors. Nickel finish, smoothness of iron, neatness of fitting, kind of grate, as well as the advantages and disadvantages of other kinds, are points about which the customer knows as much as the salesman, so that you sell on the merits of the line of goods. Not so, however, with a Southern buyer. You call to see him, talk with him, interest him, tell your business, and finally when you are going out he will ask you to call later during the day, when he will look over his stock and think the matter over. As a rule he is slow to make up his mind, and a large amount of persuasion must be judiciously employed before he can be induced to purchase. After you once get him persuaded, and he buys, he sticks to you. He asks prices, weights, freight rates, &c., and then figures what the stove will cost him laid down in his place. He adds the price of his trimmings and his profit, and tells you what he will have to sell the stove for, and thus know if he can use any. The popular prices to retail a stove for South are from $8 to $15. The stove that can be sold from $10 to $12.50 is the most popular one South, and this has to have a big oven, fire box and large wood door. A few are sold at $18 to $22, but they are in the minority. Cost and size is all the Southern dealer cares for. Grade and quality count for nothing. If you have the price right you can have the trade.

How do Northern and Southern dealers compare as to accounts due and past due?

I can say the average Southern dealer has as much respect for his credit on past due accounts as the Northern one.

Is a draft the best way to collect South, and do the business people South like or dislike it?

There is only one way to collect an account, and that is by getting the cash. The line you are selling has a good deal to do with collecting accounts, not only South,

but North. On each Monday the groceryman must pay for the goods he bought the week before, on other lines 10 and 30 days are the standard time, while on others 60 and 90 days. Competition and custom as well as local conditions enter into this many times. Competition and custom for years have entered into the stove business, and the result is four months is the time of settlement of stove accounts from certain specified dates, and no one concern can alter it. A man says, "I buy from so and so on such terms." This is not my say so, but from actual sight of invoices shown me. Now, you want this man's trade, provided he is good, and what will you do? "Why!" we say, "we will do likewise," and we write the house the particulars, which are accepted. I do not say that this is a good business policy. But we do the best we can under the circumstances. You will find a few men who are offended by drawing on them, but a large majority consider it a legitimate business dealing.

Do Southern people closely watch the change in dress and design of stoves?

As a rule they do not. Within the past few years, since the introduction of Western goods, they talk it more, being educated up to it. Most any kind of a stove, just so it is cheap and of a good size, will find a good sale among them. Door handles cast on as lugs, rivets as hinge pins, loose hearth plate that merely lies in grooves, castings full of burnt sand, all go. A large wood door, however, is a very essential feature.

Do they discuss stove scientifically—are they equal to the average Northern dealer?

They are equal to the average man. It is not necessary for them to discuss the stove scientifically. The persons who use stoves there are negroes, for nine out of ten families employ negro help to do all the work and cook. The family never sees the stove. Show the easiest way to get a stick of wood in the fire box and you have done all that is required.

Will it be wise, in view of long credits and low prices, to cater to the taste of Southern customers?

Yes, it will. The stockholders of this company risk their money in the business, and again have to further risk it in the shape of credits to secure the result to which they first put the money. The local conditions and competition govern terms and prices. The president of this company tells us as salesmen he wants the trade and for us to go after it. Our motto is to be ever increasing the business, and to do this we have to keep what is in hand and reach out for more by being careful to whom we sell. I say it is wise to continue the cultivation of this trade still further.

What is your idea as to the best mode of collecting South?

The first thing to do is to be very careful to whom you sell. Try and get the best man in the place. Then, after once selling, state your terms to him and put on order blank; then have the office see this and impress upon him that you insist upon your terms being respected. This holds good all over.

What is your idea as to the best way of selling South?

If it is intended to cater to the Southern trade it is necessary to make a study of their wants, the kind of goods used by the working classes as well as the middle classes of people. If they are satisfied with the kind they are now using, then try and give them an article as large as you can and as cheap as your competitor, or cheaper, and I think you can get the trade.

Is it good business policy to raise a customer's credit by passing over due accounts?

Frankly speaking, it is not; but for reasons thought best, and considering the circumstances of the case, it is sometimes done.

Should a salesman collect and sell, or sell and collect?

A salesman is not a collector. He should, in my mind, sell first and all the time, and afterward collect. A salesman is sent out to sell and solicit business, create a demand for the product of the house for whom he is working; but in case of a long overdue account in his field no harm can be done by sending him a statement of such account, with circumstances relating to the same, and he can endeavor to close it up. I wish to say here that all orders and statements taken and made by myself are at all times subject to the approval and acceptance of the company.

Give a good reason for refusing an order from an old customer.

If an old customer disregards his credit and allows his account to run over for a long time over the terms of sale, and repeatedly lets his notes be protested, and returns drafts without giving a sufficiently good excuse for it to us, he should have his future orders turned down until such time as he shows himself worthy of credit.

Should a traveling man use his eyes, and take in the surroundings of his customer, especially if he is slow pay?

He would be a poor salesman if he did not. That is half in deciding a customer's credit, not only in regard to a slow paying man, but to some others. The manner of displaying stock, treating customers, manner of conducting his affairs, personal habits, and as much of his life as it is possible to learn about are points which go a long way in deciding the man's credit.

The International Heater Company.

WORK ON THE APPRAISAL OF THE PROPERTIES NOW UNDER WAY.

The arrangements for amalgamation have finally been definitely agreed upon between the International Heater Company of Utica, N. Y., who were incorporated last week, and the Carton Furnace Company, Russel Wheeler & Son, Kernan Furnace Company of Utica, N. Y., J. F. Pease Furnace Company and Howard Furnace Company of Syracuse, N. Y. The International Heater Company will purchase all of the properties, rights and good will of the five concerns.

The appraisals of the various properties are now being made by Charles B. Rogers, president of the First National Bank, Utica, N. Y.; Edward B. Judson, Jr., vice-president of the First National Bank of Syracuse, N. Y.; and by Grange Sard of Rathbone, Sard & Co., Albany, N. Y., assisted by a corps of real estate and machinery counsel and pattern experts. The appraisal of book assets is now in the hands of the appraisers, assisted by Barrow, Wade, Guthrie & Co., chartered accountants, of London and New York. All of these appraisals will soon be completed, and after July 1 the business of the five concerns will be conducted by the International Heater Company, the officers of which are:

Frank E. Wheeler, president.
Edward A. Carton, vice-president.
Francis Kernan, manager.
Ernest C. Moses, secretary.
Frederick H. Moore, treasurer.

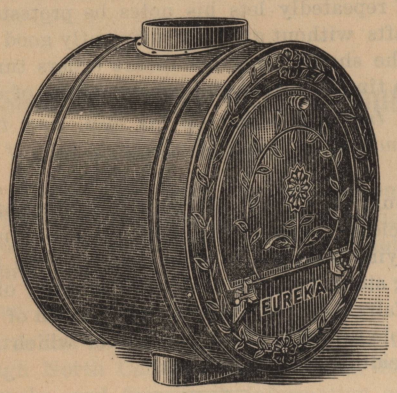
One officer was selected by the Board of Directors from each one of the selling concerns. The main office will be located at the new Wheeler plant in Utica. Branches will be maintained in New York, Chicago, Boston and Syracuse. The manufacturing will be carried on for the present at both Utica and Syracuse, with changes that will concentrate and improve facilities. The methods utilized for purchase and sale will not interfere with the regular business of the five companies, nor with that of the concern who succeed these several enterprises.

The policy of the International Heater Company toward the trade will be to keep and protect all customers of their five predecessors, and the relations of the trade that are now handling any of the different lines of heaters of any of the five companies will be the same with the International Heater Company as heretofore with any of the old companies. The International Heater Company will not disturb any of these customers, but will give them the same protection in the future as they have enjoyed with the old companies in the past.

brought against Harry F. McFassel, Jr., for using ranges made by the Grander Stove Company, and was defended by the latter company.

THE EUREKA COMBINATION OVEN AND HEATING DRUM.

The popularity of the tamale or air tight stoves has suggested the use of an attachment for the utilization of waste heat, such as is herewith illustrated. The Eureka drum is a combination oven and heating drum controlled by Cook & Van Evera Company, 171 Lake street, Chicago. The illustrations show the drum with oven doors closed, as in Fig. 1, and also with the doors



The Eureka Combination Oven and Heating Drum.—Fig. 1.—Drum with Oven Doors Closed

off, as in Fig. 2, when the drum is used for the purpose of increasing the heating capacity of the stove. A boiler hole is placed in the bottom of the oven, thus forming a tea kettle attachment. The drum is 18 inches in diameter to the outer circle. The oven is 12 x 11 x 10 inches high. This drum occupies the space of one joint of pipe, and has 6-inch collars which may be tapered to 5 or 7 inches. The drum heads, oven bottom, doors and collars are made of cast iron, while the body is of sheet steel. The draft is direct, but the current of the draft is divided as it enters the bottom of the drum.

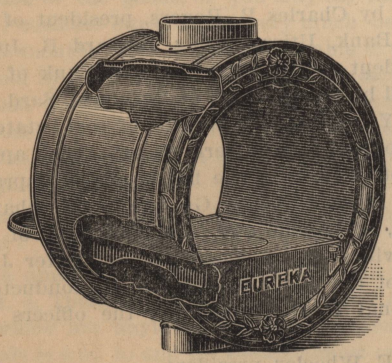


Fig. 2.—Drum with Doors Removed.

The effect of this division, made by two deflecting plates projecting down at either side of the edge of the oven bottom, is to retain the heat while not obstructing the passage of the smoke. The doors when dropped down form shelves, and when closed convert the drum into an oven, which will bake when placed upon a direct draft stove with the damper placed in the lower end of the joint of pipe immediately above the oven. The doors are easily detached, and should be removed when the drum is not used for an oven.

The advantages of the combination oven drum are as follows : It converts the direct draft heating stove into a parlor cook ; answers the purposes of high shelves, warming oven and tea kettle attachment ; is convenient for heating irons, and increases the heating power of the stove. It is offered by the manufacturers as a desirable attachment for all direct draft stoves which have no boiler holes, tea kettle attachments or ovens. It is adapted for use anywhere along the line of pipe leading from a direct draft stove.

ODD PLATES.

A. H. Wolff, formerly vice-president of the Wolff Gas Radiator & Mfg. Company, New York, has resigned from the company and is preparing to enter into the manufacture and sale of an entirely new line of Domestic Gas Heating and Cooking Apparatus. He now has an office at 105-107 Bleecker street, New York, where he is attending to the details of bringing out the new Wolff Radiators, Heaters, Cookers, &c.

A. L. Canfield, Beekman and Pearl streets, New York, is distributing among his customers a pocket map of Cuba in a stiff cover, bearing the address of the Danville Stove & Mfg. Company, Danville, Pa., manufacturers of the Beaver Stoves and Furnaces. The map is printed in colors showing the different provinces on the island, and in one corner is an enlargement of the province of Havana on which all the smaller towns near the city are plainly marked.

Patterson, Gottfried & Hunter, Limited, 146 Centre street, New York, are issuing a catalogue of interest to Stove manufacturers and those who use Lathes, Power Presses, Milling Machines, Grinding and Polishing Machinery. The catalogue consists of 32 pages and is profusely illustrated. Beneath the cuts of the various goods are the list prices at which the goods are sold.

R. M. Clark, vice-president of the Clark Stove Company, Kansas City, Mo., is the inventor of a Combined Canopy and Shelf Attachment for Cook Stoves. The Canopy receives the heated currents rising from the Stove which are utilized in connection with it for keeping food that has been cooked warm while a meal is being prepared.

It is reported that the Memphis Stove & Mfg. Company, Memphis, Tenn., are about to enlarge their plant.

J. J. Leonard, manager of the Toledo Stove Company, Toledo, Ohio, was a visitor at the office of *The Metal Worker* this week, and expressed the opinion that the movement by the Stove manufacturers to correct abuses in the trade and to make a slight advance in price would be met with no strong opposition on the part of the dealers, as all who are engaged in the trade realize the necessity of getting more money for Stoves.

George W. Young, Hopkinsville, Ky., is making a specialty of the Charter Oak Stoves, and sends us a copy of the local paper in which a half page is occupied with an attractive advertisement calling special attention to their constructive features. The advertisement also shows the Gurney Refrigerator, as if to contrast the functions of two highly useful domestic appliances.

The Bonnet-Nance Stove Company, Chicago Heights, Ill., poured off the first heat in their new foundry on Tuesday, 28th ult. Everything worked nicely, and a good start was made toward what is hoped to prove a prosperous career.

The Gem City Stove Mfg. Company, Quincy, Ill., are distributing to their patrons and friends a gold-plated watch charm as a souvenir. The sides are celluloid, showing on one a representation of the company's famous German Heater, and on the other the legend : "The German Heater beats all for heat and economy."

The Eclipse Gas Stove Company, Rockford, Ill., have issued a circular describing their Broiler, in which the meat is broiled in a vertical and not a horizontal position, with one burner on each side ; their Round Water Heater, made in three different styles, but connecting with the pipes on the side of a kitchen tank ; Sad Iron Heaters and the Original Coke Baker.

Cole Mfg. Company, Chicago, Ill., and Council Bluffs, Iowa, advise us that the sale of their Hot Blast Stoves for soft coal and their Air Tight Stoves for wood is nearly double what it was this time last year. Four orders recently received by them aggregated 51 carloads. Their works are running full, and by largely increasing their working forces and also adding to their machinery they are enabled to make prompt shipments.

Judge Dallas, in the Circuit Court of the United States for the Eastern District of Pennsylvania, has filed an opinion dismissing the bill in the equity suit brought by the Thomas, Roberts, Stevenson Company against Harry F. McFassel, Jr., in which the court was asked to enjoin the defendant from an alleged infringement of the patent for constructing a range with a horizontal boiler supported on a frame above the range. The opinion holds that there is nothing patentable in the improvement, the principles involved being those commonly applied to heating apparatus. The suit was

HEATING AND PLUMBING.

North End Union Plumbing Graduates.

The North End Union Plumbing School of Boston, Mass., under the superintendency of Samuel F. Hubbard, appears to be carrying on a most useful work. The attendance of students grows each season, and the majority of those who receive instruction are already employed as helpers in the plumbing trade. In the season of 1897-98, lately closed, 64 young men went through the course, of whom nine were granted certificates of proficiency after having completed two seasons of study and successfully passed the required examinations. It is expected that a much larger number will graduate from the school next year, as five-sixths of those taking instruction during the past season were in their first year.

Very interesting exercises were held in the North End Union Rooms, 20 Parmenter street, at the close of the term, together with an exhibition of the work of the plumbing class of 1897-98, which reflected much credit alike upon instructors and pupils. Edwin D. Mead presided upon the occasion, and the opening address to the pupils was made by David Craig, president of the Master Plumbers' Association of Boston. Congratulating the young men on the proficiency they had attained, Mr. Craig offered them some words of practical advice in the following terms :

MR. CRAIG'S ADDRESS.

Do not go away from this school and forget the lessons taught, and I hope learned, here as to your deportment, promptness and the numerous other qualifications which you have acquired here. If you began work promptly here, begin just as promptly when employed as a plumber, and do not expect to get your "beauty sleep" after the hour to begin work has come. I want to impress these young men to-night with the importance of being industrious and diligent ; above all things be diligent—diligent every minute of the working hours. Now that you have received the "guinea stamp," as it were, you become a member of the plmbing fraternity, and a unit in the army of labor. It is very important that you take heed as to how you are to be a successful workman, "worthy of his hire." By being diligent while at work, I mean ; of course, supplemented by the intelligent direction of your efforts, but diligent under all conditions and circumstances. Do not be turned aside from any plans you have made as to the "lay out" of your work unless structural or other very important reasons interfere. Create conditions, and again adapt yourself to conditions as you find them, always with the end in view of pushing your work to completion. Do not be turned aside by some other mechanic on the work who wishes or demands that you wait until he has accomplished a certain amount, as it is very often detrimental to your employer's interest and to your own progress to do so. Be aggressive and have a proper appreciation of your own position. You are to get a living as well as the numerous other mechanics employed on the construction. Remember also that all the mechanics working with you have the same rights and privileges that you enjoy. Be mindful of the materials and tools intrusted to your care ; caution others as to their notice and care of the same. Remember that the care of materials, no matter whose, is at all times to be considered and looked after. Be not subject to the beck and call of every one who imagines he is waiting for you, as every time you change your location while working your employer is losing some of his profit. On the other hand, do not expect the carpenter, mason or other mechanic to furnish you help three or four times a day, as you should so plan your work that these men can work at their portion of it consecutively until completed ; for what I said about cost applies in both cases. Be neat and tidy about your work, and have your helper the same. Keep the helper employed under all conditions, as you know the criticism will be—when the bill is presented—that "he did nothing but stand 'round." I look to you, young men, to eradicate these criticisms in your case, and in that way we will have made a step toward silencing such attacks.

Always have something to work upon while waiting for the solder pot or iron to heat. If you have a number of fixtures to put in place, and the placing of one is to be repeated in a like manner for each—that is, like materials and connections—then, when getting a trap ready for one, get all the traps ready. Likewise the supplies. While working one kind of material, say lead pipe, do all the lead pipe work ; so also with the brass and iron pipe. In this way you can accomplish a great deal more work than in changing around from one branch to another. Exercise forethought and have something under way besides that which you have in your hands. Be able to foresee and foretell the results as to appearance and finish when the other parts of the construction are put in place. Be mindful of your employer's interest in the laying out of your work, and do not use material and time to accomplish that result which you can get with less material and labor. Be not tied down to precedent always, even if that was the way things were done in such and such a shop. Be a student of your craft at all times, and if you receive an impression or any information which you think will benefit you in your work, retain it and apply it. Be original in your ideas, and work them out to satisfy yourself as to how far correct and applicable the results are. Remember that in plumbing, as in all things, there is always a great deal to learn—new methods to be tried, and changes to be made in executing the work, as the art is changing and the practice shifting from year to year. Particularly is this true at the present time. You have individually established a degree of efficiency here in the school for your work. But remember that when you are doing work which is to be buried underground, or under floors—to do that which insures a strong, substantial and proper job ; and leave off the frills, as they are not required and do not add to your employer's or your own earnings. Competition is so sharp that it is of the utmost importance that you do that only which is necessary to the production of a harmonious, finished job, and that superfluous and questionable details be left off. I do not mean for you to lower the standard of your work, but exercise that judgment in the matter which will make your services valuable to your employer and logically satisfactory to yourself.

The art of plumbing is considered by many people as a highly intelligent calling, and it is said that plumbers are "born, not made." The latter is not so. To be a plumber requires only the application of the individual, who must, of course, have a mechanical turn of mind. Some acquire proficiency earlier than others, grasping the subject quicker, and being more expert at handling tools and materials. Yet "line upon line ; precept upon precept ; here a little and there a little," will place any one in the ranks of the finished mechanic. I say this to impress you with the fact that you, as plumbers, at all times, are of the same clay as the rest of mankind, and it only requires common sense and application to have a measure of success in anything. You, as plumbers, have fallen into a peculiar heritage. You will be the butt and jest of the whole community, as your predecessors have, in a measure, deserved this. See to it that you, individually, will wipe out the impressions which the public ignorantly holds of the plumber—those of which I have spoken. Have pride and faith in your calling ; elevate it by the silent influence of example and practice, and maintain that standard among your friends, other mechanics and the public generally. Once more, remember that the wisest of men has said that "a man diligent in his business shall stand before kings."

Mr Craig was followed by John Crawford in a bright speech full of humorous and sage remarks, which he closed with this aphorism : "Keep your bodies and souls clean—and your overalls."

Isaac Riley, ex-president of the Master Plumbers' Association of Boston, then addressed the young plumbers as follows :

MR. RILEY'S ADDRESS.

After what Mr. Craig and Mr. Crawford have said, and said so well, I am almost at a loss for further observations. I may be permitted to remark, however, that I have critically examined the work of the graduating class and take pleasure in saying that it is good work and evinces not only patience and perseverance but also pride and interest in the various problems attacked. You must bear in mind, however, that you have performed this work under the most favorable conditions, with the plumbing in the most easily accessible positions, with unlimited time at your disposal, and the use of every appliance for manipulating, holding and staying the various parts together. Under the more practical conditions of plumbing, when thrown upon your own resources, you will find matters radically different. Then you will meet the plumbers' trials and difficulties, such as sediments, drippings, difficulties in accessibility of the plumbing, and other unforeseen contingencies. These will be your opportunities for discovering your own resourcefulness, showing your ability to rise superior to the difficulties with which you are confronted, and thus enable you to prove yourselves competent to be intrusted with work by an employer and relied upon to execute it successfully. I have been wondering what you young men would do if you had to serve a seven years' apprenticeship as I did. We were taught to be plumbers in the broadest sense ; workers in lead, making our own pipe ; casting and rolling our own sheet lead, and forming by hand our traps and bends from the same. We were likewise made proficient in lead burning joints—all lost arts in these days of specializing and machine manufactured goods. But evolution has created a revolution in plumbing as in other trades, and the plumber of to-day is little more than a fitter only, and when you leave this school with your soldering cloths and go into a shop you must not be surprised to find yourselves face to face with many a job where neither cloth nor metal pot will be used at all. I am informed that many of you have nearly reached the top round of the ladder in merit, and I am heartily glad to hear it ; but remember, something in addition is required to make a successful man. I would rather employ a boy with 50 per cent. merit and a character for honesty, truthfulness, gentlemanly conduct and cleanliness—not only in person, but about his work—than a young man with 100 per cent. merit and lacking in the other virtues I have mentioned. I wish you, one and all, a prosperous and successful career.

S. N. D. North, secretary of the National Wool Association, and Hon. Frank A. Hill, secretary of the Massachusetts State Board of Education, then spoke upon the value of trade education, after which diplomas were presented to the following graduates :

Matthew J. Bradley, Boston, Mass.
Edmund A. Borke, East Boston, Mass.
E. W. Carpenter, Cambridge, Mass.
F. W. Downing, Hyde Park, Mass.
H. E. Hale, Malden, Mass.
David J. McGillivray, Cambridgeport, Mass.
D. W. Nichols, West Medford, Mass.
Geo. C. Watts, Boston, Mass.
James Woolfall, South Boston, Mass.

The sixth term of the North End Union Plumbing School will begin on Monday evening, October 3, 1898, and those intending to enter the school should send in their names at once, as it has been impossible each season to assign benches to all the candidates who have applied for instruction. Blank applications may be had by addressing Samuel F. Hubbard, superintendent, 20 Parmenter street, Boston, Mass.

AMERICAN AND ADVANCE BOILERS.

We have received from the Kellogg-Mackay-Cameron Company of Chicago, Ill., a catalogue devoted to vertical sectional boilers. It is bound in green covers and printed on a highly finished paper. This boiler, when used for steam, is known as the American, and when used for hot water is called the Advance. The boilers are made in three series, one series having grates that are 36 inches wide, the second series with grates 28 inches wide and the third series with grates 20 inches wide. The first series are specially adapted for large work, and are made in seven different sizes rated to carry from 1550 to 3950 square feet of steam radiation and from 2700 to 6300 square feet of direct radiation for hot water. Broken views are used to show the return flue construction and the fire travel, also the water ways and the amount of surface presented to the action of the fire. One page is devoted to a skeleton view of the grate and ash pit section. The grate is of the labor saving type, having bars that rock alternately. The last two pages contain a list of those who have used these heaters with satisfaction, and includes private residences, schools, stores, churches, hospitals, hotels and other public buildings.

NATIONAL STATE VICE-PRESIDENTS AND COMMITTEES.

We are indebted to W. Emmet Crosby, executive clerk of the National Association of Master Plumbers of the United States, for the names of the National State vice-presidents and of the several committees appointed by President Samuel L. Malcolm for the year 1898-99. The names and addresses are given below :

National State Vice-Presidents.

Alabama—Daniel A. Farrell, Eleventh and Wilmer streets, Anniston.

Arizona—D. H. Burtis, 31 East Washington street, Phœnix.

Arkansas—August Reichert, 16 North Fifth street, Fort Smith.

California (Northern)—C. W. Iredale, 952 Mission street, San Francisco.

California (Southern)—Geo. Schneider, 2113 East First street, Los Angeles.

Colorado—Thos. J. White, 1543 Champa street, Denver.

Connecticut—S. E. Dibble, 639 Grand avenue, New Haven.

Delaware—Thos. J. Biscoe, 616 Orange street, Wilmington.

District of Columbia—Robt. B. Caverly, 504 Tenth street N. W.

Florida—John Einig, Main and Forsyth streets, Jacksonville.

Georgia—T. J. O'Brien, 45 Whitaker street, Savannah.

Illinois—Chas. T. Byrne, 4308 Cottage Grove avenue, Chicago.

Indiana—Geo. F. Kirkhoff, 128 West Market street, Indianapolis.

Iowa—Henry Dunker, 304 Harrison street, Davenport.

Kansas—A. P. Elder, 208 South Main street, Ottawa.

Kentucky—G. E. Morlidge, Eighth and York streets, Newport.

Louisiana—L. Luderbach, 130 Carondelet street, New Orleans.

Maine—John B. Smith, 40 Main street, Lewiston.

Maryland—Chas. H. Frederick, 317 Park avenue, Baltimore.

Massachusetts—O. S. Kendall, 466 Main street, Worcester.

Michigan—James W. Partlan, 56 Congress street East, Detroit.

Minnesota—Allan Black, 149 East Sixth street, St. Paul.

Mississippi—T. J. Cady, Columbus.

Missouri—M. J. Ward, 3429 Olive street, St. Louis.

Montana—John E. Young, 410 East Park avenue, Anaconda.

Nebraska—J. J. Hanighen, 2705 Leavenworth street, Omaha.

New Jersey—John Campbell, 26 Lake street, Paterson.

New Mexico—Thomas Hudson, Deming.

New York—Jonas A. Rossman, 132 East Forty-second stereet, New York City.

North Carolina—L. B. Brickenstein, Salem.

North Dakota—W. D. Allen, 15 Broadway, Fargo.

Ohio—Louis Poplowsky, 347 Prospect street Cleveland.

Oregon—H. Claussenius, 422 Washington street, Portland.

Pennsylvania—Frank P. Blythe, 624 Wylie avenue, Pittsburgh.

Rhode Island—C. P. Brennan, 1 Waterman street, Providence.

Tennessee—John Lang, 37 Jefferson street, Memphis.

Texas—A. H. Shafer, 125 West Commerce street, San Antonio.

Utah—D. W. James, 67 South Main street, Salt Lake City.

Virginia—James E. Phillips, 1421 East Main street, Richmond.

Washington—J. A. Cowgill, 430 Third avenue, Spokane.

West Virginia—Chas. H. Turner, 308 Juliana street, Parkersburg.

Wisconsin—Charles Polacheck, 431 Chestnut street, Milwaukee.

Wyoming—P. S. Cook, 219 West Sixteenth street, Cheyenne.

Essay Committee.

John W. Cooney, 384 Amsterdam avenue, New York.

Daniel A. Farrell, Eleventh and Wilmer streets, Anniston, Ala.

John M. Dungan, 616 Main street, Little Rock, Ark.

J. E. Kuchler, 320 West Forsyth street, Jacksonville, Fla.

T. B. Davis, 112 West Seventh street, Rock Island, Ill.

Apprenticeship Committee.

Louis Poplowsky, 347 Prospect street, Cleveland, Ohio.

Wm. Hill, 618 Sixth avenue, New York City.

C. C. Hartwell, 213 Baronne street, New Orleans, La.

F. J. Sturn, 930 Broad street, Newark, N. J.

Patrick Tierney, 522 Westminster street, Providence, R. I.

Sanitary Committee.

D. F. Sullivan, 301 Commerce street, Dallas, Texas.

William Koch, 724 Thirteenth street N. W., Washington, D. C.

Thomas H. Radcliffe, 824 Fulton street, Brooklyn, N. Y.

R. L. Dodson, Albuquerque, N. M.

Will Reese, 60 East Second South street, Salt Lake City, Utah.

Legislative Committee.

S. E. Dibble, 639 Grand avenue, New Haven, Conn.

A. J. Clerkin, 779 Grand avenue, New Haven, Conn.

James Ahern, 280 Asylum street, Hartford, Conn.

J. B. Weiant, 67 Arch street, New Britain, Conn.

Geo. E. Scofield, 223 East Main street, Bridgeport, Conn.

A PLUMBER'S LETTER TO THE EDITOR.

We take pleasure in giving place in our columns to the following letter which calls upon our readers to write to the Editor in regard to matters of interest. Such interchange of views and experiences and discussion of trade questions cannot fail to be interesting:

A short time since we received a call from a member of your staff, and we are pleased to learn from him that the readers of *The Metal Worker* are invited to contribute anything which might be of service to any of the various metal trades in whose interest the paper is published. If this request were taken advantage of by its readers it would result in making *The Metal Worker* even more helpful than it has been in the past. There are very few engaged in any of these trades but have had and are having experiences the recital of which would prove mighty interesting as well as instructive to their fellow craftsmen. Let us remember, then, when we are able to furnish something the other readers of the paper would like to know, that they in turn will do the same for us.

The J. F. Pease Furnace Company, Syracuse, N. Y., will supply the apparatus to be used in heating the new High School Building at Johnstown, N. Y. The system to be used is a combination hot air and steam plant, and will cost $1557.

THE NEED AND VALUE OF PLUMBING REGULATIONS.

The following able report was presented June 29 by J. W. Hughes of Montreal, secretary of the Sanitary Committee to the National Association Master Plumbers, Gas, Steam and Hot Water Fitters of the Dominion of Canada:

Your Sanitary Committee have pleasure in reporting that during the past year considerable progress has been made in the most necessary of all work in the sanitary way—viz.: General education of the public. The pulpit, the press, the school, the platform and, last but not least, the master plumber and the master plumbers' associations, have all contributed their share, and slowly but surely the general public are awakening to the fact that it pays to be healthy. Once this view of the question becomes the general belief of the masses there will be no difficulty in the making and, what is of more importance, the carrying out of sanitary laws and by-laws. But there is still an immense amount of missionary work to be done before the masses and the classes believe practically that most cases of illness are caused by a violation of nature's laws, which are God's laws, for He made them, and that any infraction of them will be followed by a sure and certain punishment.

If our people drink sewer polluted water, they will have to bear the pains and penalties as well as the expenses incidental to an outbreak of typhoid fever. If they inhabit filthy dwellings, breathe a polluted atmosphere and live in the midst of unsanitary surroundings, they will be subject to the penalty of having some filthy disease. Man can no more take into his system the germs of disease and expect to escape the penalty than he can swallow arsenic or laudanum and escape the effects of these drugs.

If, instead of looking upon an outbreak of illness as a mysterious dispensation of Providence inflicted upon us for our sins in general, we understood that the sin of violation of God's sanitary laws was visited by the punishment made and provided, there would be more attention given to the state of the drains, the source of the water and milk supplies, and our legislators would not hesitate to pass and, what is more important, enforce laws calling for good plumbing, pure water, effective drainage, light and ventilation in our dwellings in proportion to the needs of the occupants.

Your committee would recommend our association to point out to our legislators the necessity already great in our large and growing cities for the careful supervision of tenement houses and the dwellings of the poor. Already there is overcrowding, dark rooms are becoming common, absence of sunlight and ventilation is producing the usual results, and if our large towns wish to avoid the sad and costly experience of other countries the question must be taken up at once. Plumbing by-laws and general sanitary regulations are needed for the protection of the masses and especially for the poor who are unable to protect themselves.

The rich employ the best talent and use all precautions against the admission of disease producing elements into their homes. The poor man, alas! is compelled by his poverty to live under such conditions as his purse will allow. The State has a duty in this matter, that of protecting those who cannot protect themselves in sanitary matters, and your committee would strongly urge upon our legislators in the Dominion Parliament the passing of a law for the Dominion covering these important questions; a law laying down the general principles and preventing the use of improper materials or the employment of wrong methods, whether in the city, town, village, or the isolated dwelling.

The public press has recently given an account of a terrible state of affairs in connection with a certain public work. Accounts of the outbreak of diphtheria and kindred diseases in lumber camps and similar places are not infrequent, and the little hamlets and villages

are frequently visited by death dealing scourges that would have no existence were even the most elementary sanitary laws known and practiced by the inhabitants.

Men are employed by the Government to educate our people in such questions as the manufacture of cheese and butter or the rotation of crops; surely the health of our inhabitants, the most important asset we have, is of equal importance. Millions have been spent in inducing the foreigner to come to our country; surely a few thousands could be spared to protect and prolong the lives of our much more valuable native population. As long as the death rate in any district remains above normal, it proves that valuable lives are being wasted, the saving of which would be at least of equal value to the country, to the introduction of foreign emigrants to take the place of those needlessly sacrificed.

In the special line in which we are interested progress has been made. The call for the better class of fixtures is becoming more frequent, better materials are being used, and slowly but surely the public is being awakened to the fact that good plumbing pays, that the best is none too good, and is in the end the cheapest, and that every man who can caulk or solder a joint is not entitled to be called a plumber.

Rigid examination and certification of plumbers will, we hope, soon be the rule and the inspector of plumbing be considered as necessary to the completion of the roll of municipal officers as the Mayor or City Surveyor. To secure these things we must work shoulder to shoulder, not crushing a weak brother, but rather lending him a helping hand, for in the uplifting of our calling and upon the proper appreciation of it in a great measure depends the health of large numbers in our cities and towns.

LEAD PLUMBING.

BY M. A. C.

I think the plumbers will do well to advocate more generally the use of lead pipes for plumbing work. To please the eye it has been the custom to use in all the exposed piping, in bathrooms in particular, and other portions of the house, nickel plated brass pipes. These no doubt when kept in fine condition are pleasant to look upon, but the labor entailed in keeping them polished bright is no small item. This opinion is the result of experience. I had been doing nickel plated work for my customers for a considerable time, and my family had the same idea that many others had, that we must have nickel plated plumbing when we rearranged the bathroom in our own house—and I must confess that I took more or less pride that I was also to have a glittering bathroom. One of the first pipes to show the need of attention after my new bathroom was completed was the flush pipe to the water closet. I soon began to notice that the trap under the lavatory and the overflow and waste from the bathtub, as well as the service pipes to the different fixtures, were commencing to show the need of polishing, and for some time it has taken a good portion of a forenoon in every week to brighten these pipes up with polishing material.

I have no hesitation in saying that nothing would induce me to use anything but lead pipes when I plumb my house again. If a plumber is careful to keep the dents out of his service pipes and runs them true, in good alignment; wipes his joints of good form with fine solder, then soils his work neatly afterward, I think it presents an appearance that may not be as glitteringly attractive as the nickel pipes, but which cannot be said to be objectionable. If after the lead work is finished a coat of transparent varnish is given all the pipes, they will need no attention for years, and will retain a very satisfactory appearance. In case of repairs or accidents which require the piping to be taken down, it is far easier to take down lead work and put it up again than the nickel plated piping, which is often difficult to make tight again. If it is good for the shoemaker to stick to his last, I would say it is equally so for the plumber to stick to his lead.

MYERS' BRASS CYLINDER PITCHER PUMPS.

F. E. Myers & Bro., Ashland, Ohio, are manufacturing the Myers brass cylinder pitcher pumps, as shown in

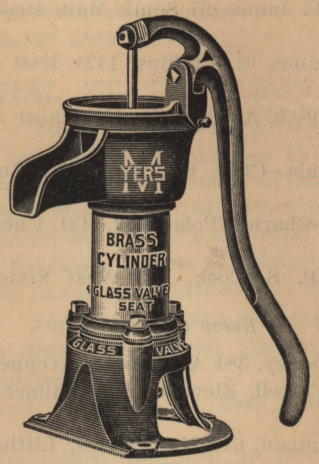


Fig. 1.—*Myers' Brass Cylinder Pitcher Pump, Plain.*

Figs. 1 and 2. Fig. 1 illustrates a brass body pitcher pump, with seamless drawn brass cylinder, glass seat and revolving top. The base is of new and novel design, and

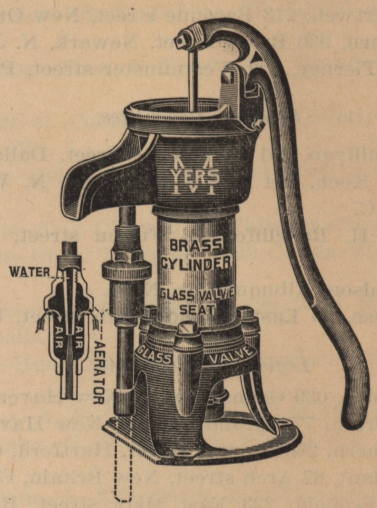


Fig 2.—*A Similar Pump with Aerator.*

is attached to the cylinder by means of three heavy bolts. Fig. 2 is a similar pump, with aerator attached. These pumps have drop valves, so arranged as to drop the water to prevent freezing, and are put on the market as a superior article for improved modern plumbing.

We have received from the Judson A. Goodrich Company, 120 Beekman street, New York, two circulars, one specially devoted to a Steam Pressure Regulating Valve designed for use on combination systems where a portion of the steam is used at a high pressure for power purposes and a portion used at a reduced pressure for heating. The other circular shows an Automatic Steam Trap made with an open float, so that it fills and empties alternately by a simple and powerful mechanism which controls the valves. The self cleaning qualities of the valve enable it to operate with satisfaction on grease extractors. The Trap can also be used to raise water about 2 feet for each pound of pressure under which it is working.

ENGINEERS' SUMMER MEETING.

The members of the American Society of Heating and Ventilating Engineers are receiving the following letter from Secretary S. A. Jellett in reference to the summer meeting:

The semi-annual meeting of our society will be held at the Hotel Irvington, Virginia avenue, near the beach, Atlantic City, N. J., July 15, meetings being held at 2.30 in the afternoon and 8 o'clock in the evening of that day. The Hotel Irvington has made a rate to our members of $2.50 per day, two in a room, and $3 for single room for one person; but as the date selected for our meeting is during the summer rush all members are advised to write direct, as above, and secure what accommodations they wish, naming length of stay, &c. The meeting will be given up entirely to the reading and discussion of papers bearing on our branch of engineering, and it is hoped that a large number of our members will attend.

On account of the delay in receiving the papers it will not be possible to mail programmes to members in advance of the meeting, but your secretary will be pleased to answer any inquiries.

A joint meeting of the Board of Managers and the Council will be held on July 8 to make final arrangements for a successful meeting.

NOTES.

The Commissioner of Water Supply, James Moffatt of Brooklyn, is issuing a notice under the new charter of the city of New York that water meters must be used in stores, workshops, hotels, factories, ferry houses, stables and in all places where water is furnished for business consumption. The meters approved by the Board of Public Improvement in accordance with the law are the Worthington, Crown, Thompson and Trident. Applications for permits to set meters must be made by licensed plumbers.

The annual election of officers of local union No. 27 of the Journeymen Plumbers of Pittsburgh took place Tuesday night at a meeting of the organization held at Knights of Labor Hall, 66 Third avenue, Pittsburgh. Many candidates were nominated for each office, and the election resulted as follows: J. B. Paul, president; Edward Welsh, vice-president; James P. Bradley, recording secretary; H. Weaver, financial secretary; directors, James J. McKee, George Rodgers, Stephen Kenny, James Deer, Steward Whitehead, Harry Gill, George Coffer; trustees, James J. McKee, Edward Welsh, James P. Bradley; inside sentinel, Morris, F. Sullivan; sick and death benefit fund, John Kingsley, secretary; Emory Hesser, treasurer.

The Goulds Mfg. Company, Seneca Falls, N. Y., and 16 Murray street, New York City, are issuing a special circular and price-list of Goulds' Air Pressure and Vacuum Pumps, including small Pumps for bicyclists, plumbers and gas fitters, and larger Pumps to be operated by powerful levers by hand and others to be operated by power. The larger Pumps are water jacketed and provided with crank shaft and pulley.

In *The Metal Worker* of June 18 an error was made in the name of one of the members of the Executive Committee from Attleboro of the Massachusetts State Association of Master Plumbers. James W. Gifford is the name that should have been given.

Thomas W. Weathered's Son have moved their New York office to the Weathered Building, 46-48 Marion street, between Prince and Spring streets, giving them a front on Elm street, which is being widened through an ordinance of the city.

An order was placed at the New York office of the American Radiator Company of Chicago by Wells & Newton Company of New York for 60 Perfection Steam Radiators to be used in the Mutual Life Building at Seattle, Wash.

M. C. Pierce, treasurer of the Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., after spending a few days in Boston, visited their New York office at 94 Centre street this week.

Timothy E. Daly of Herkimer, N. Y., secured the contract for plumbing the new parochial house of St. Francis de Sales.

Photographs are being shown to some heating contractors of a new Wall Radiator, which is about to be placed on the market by the American Radiator Company, Chicago.

James W. Birkett, well known in the heating and plumbing trade, died at his residence in Brooklyn, N. Y., on Wednesday night. He was born in Manchester, England, in 1842, and came to the United States with his parents when four years old. He served as an apprentice at the plumbing trade, and later started in business for himself. He became well known through the manufacture and sale of Heating and Plumbing Specialties and Gas Fixtures. He was a Mason, a member of the G. A. R., and the Veteran Volunteer Firemen. He also served a term in the Senate of New York. He is survived by a widow, one daughter and two sons.

The arrest of a boy for bathing in a canal at Augusta, Ga., has resulted in a subscription for the erection of a public bath house.

The Commisioners of the District of Columbia have refused to grant a master plumber's license to a plumber on the ground that he had caused a permit to be taken out in his own name when the work was to be done by another plumber who had no license.

A. W. Stevens of Logansport, Ind., bid $2259 and secured the contract for heating the new Olcott street School Building. He will use a horizontal tubular steam boiler. The system will take fresh warmed air from one chamber and distribute it through the building. The system will also provide for exhaust flues for ventilation.

Green & Logan of Bridgeport, Conn., have secured the contract for plumbing and sheet metal work for the Hammond Beef Company.

F. A. Wendel has increased his facilities for handling his plumbing business and materials at Watertown, Mass., by leasing a large storehouse.

W. F. Ashenhurst & Son of Little Falls, N. Y., have secured the contract for the plumbing work in the new school building at their bid of $3350.

The many friends of W. S. Newkirk will learn with regret of his bereavement in the loss of his wife, who died after a brief illness this week.

Hardwicke & Co. of Niagara Falls, N. Y., inform us that they have been awarded the plumbing contract for the new theater at Niagara Falls, and that the steam heating contract has been awarded to F. W. Oliver & Co.

New Firms and Changes.

Eldreth Arnold of Auburn, Maine, has leased the Colonel Emerson Building on Main street, and will remodel it for his plumbing business.

William Smith and J. H. Sullivan have formed a partnership, and will carry on the plumbing business at 4 Granite street, Fitchburg, Mass.

James S. Cassedy, for a number of years foreman of Pratt's plumbing establishment in Winchester, has purchased the Forest Hooper business in Woburn, Mass., and will continue the same at 486 Main street. Mr. Hooper will remain with his successor until July 1, and afterward will enter a firm in Boston.

W. P. Fowler has been registered as a master plumber and gas fitter in Washington, D. C.

The partnership existing between R. Kinsella and R. W. Johnson, at San Rafael, Cal., has been dissolved by mutual consent. Mr. Kinsella will continue the plumbing and gas fitting business at his store on B street. Mr. Johnson will conduct a Hardware, Stove, Range and House Furnishing store, also on B street.

Phillips & Kingsberry, Vellundi, Col., have purchased the entire plumbing stock of S. E. Farrell, and will conduct a plumbing business.

J. Christopher, Sharon, Mass., has moved his plumbing shop to Chestnut street, where he will also carry a line of stoves.

The Bankruptcy Bill.

The House of Representatives on the 28th inst. adopted the report of the conferees on the Bankruptcy bill, which, having already passed the Senate, now goes to the President for signature. Under the terms of the act the new law goes into full force and effect immediately on its passage, "provided, however, that no petition for voluntary bankruptcy shall be filed within one month of the passage thereof, and no petition for involuntary bankruptcy shall be filed within four months of the passage thereof."

The Uehling casting machine has just been successfully installed at the Struthers furnaces, Struthers, Pa. The first cast was on June 24. They are now taking all the iron on one turn, and will run double turn as soon as the gang of men is broken in for night turn.

TRADE REPORT.

METAL MARKET.

In most lines of the Metal market signs of the usual midsummer dullness are apparent. Copper is decidedly weaker, and Spelter has not entirely maintained its late strength. Tin and Lead are firm but quiet, and Tin Plates show exceedingly little activity, with a weaker tendency in prices.

Pig Tin.—Business during the week has been very quiet. The demand from consumers has fallen off somewhat, and even the higher quotations from London had no effect here. Prices have remained unchanged in this market, and jobbers quote Straits Pig in small lots at 16c. to 16¼c. per lb. It is a little premature to give any figures regarding the statistical position which has been left by last month, but it is predicted that they will not show an improved condition. As far as we can learn, deliveries here have been reduced to a considerable extent. The arrivals for the month of June are figured by the Metal Exchange at 1845 tons.

Copper. — The market here has been very dull, and remains easy as the result of continued heavy production with a slackness in both export and domestic orders. Only the comparatively large amount of Copper going out on former contracts saves the situation from extreme weakness. Jobbers' quote Lake Ingot in small lots at about 13¼c. and Ansonia Grade Casting Copper at 12½c. per lb. The exports for the month of June are given by the Metal Exchange at 8022 tons.

Sheet Copper.—There is no change in this department, where dullness reigns supreme. Only small orders for current needs are booked, and prices are rathed irregular, although dealers usually quote small lots of Sheet Copper from stock on the basis of 16c. per lb.

Pig Lead.—This metal has been quiet, but maintains its strength, prices being firmly held. The volume of business was quite moderate and offerings reserved. Retailers quote American Pig at 4¼c. to 4⅜c. per lb. The general opinion regarding the production here is that while the product of the Missouri district has been increased somewhat, the Western districts will show a falling off.

St. Louis advices are as follows : The market is firmly maintained, and buyers are plentiful at the higher figure. The consumptive demand is very heavy, and as most consumers were carrying light stocks the advance in price has caused a rush to cover requirements.

Lead Pipe and Sheet.—As noted elsewhere, the Eastern makers have advanced the price of these materials ½c. a pound, in sympathy with the higher price of the raw material. Jobbers quote Lead Pipe at 6c. per lb. and Sheet Lead at 7c., subject to the customary trade discount of 20 per cent. The demand is referred to as very tame.

Spelter. — There has been no change in the position of the market since our last report. Prices are rather irregular, and largely nominal. A report is current of a movement on foot in the West to restrict production. The demand is very moderate locally, but jobbers stick to the higher figures inaugurated lately, small lots of good Western Spelter commanding 5¾c. to 6c. per lb.

St. Louis advices are as follows : The price reached last week is still maintained. A movement is now on foot to reduce production to such a point that there will be no surplus offerings. This if accomplished will dispense with the necessity of exporting form 2500 to 3000 tons per month. By reducing the output of Spelter the demand for ores will be lighter, and producers anticipate a lower range of prices for ores, while they expect to still maintain to-day's price for Spelter. The scheme looks enticing, and it may go through.

Sheet Zinc. — A fair business has been done at the recent advance in the price of this material. Jobbers quote 600-lb. cask lots at 6¾c. to 7c. per lb., and smaller quantities at 7¼c. to 7½c.

Antimony — There has been no change in any of the grades, and all are held up firmly. Cookson's we quote in small parcels at from 10½c. to 10¾c. and Hallett's and Japanese at 9½c. to 10c. per lb.

Nickel — Has experienced no change, and we would quote small lots at about 40c. per lb.

Aluminum.—An active demand is reported for this metal. Prices are as follows: No. 1 Aluminum, guaranteed over 99 per cent. pure, in Rolling Ingots, is quoted in small lots at 40c. per lb.; 100-lb. lots, 36c.; No. 2 Ingot, guaranteed over 90 per cent. pure, is quoted in small lots at 34c. per lb.; 100-lb. lots, 33c., and special Casting Alloy, containing over 80 per cent. pure Aluminum, used in place of Brass, 35c. per lb.; 100-lb. lots, 30c.

Tin Plate.—The end of the quarter and the advent of the dull summer period combined to make an exceedingly dull week. A small run of orders for American Cokes for spot and early future delivery was the only thing that relieved the market from an aspect of actual stagnation. Prices are referred to as somewhat more weak and irregular, especially for distant futures. In the retail trade, orders were merely for limited quantities to fill current requirements, making a meager total. Jobbers' prices for moderate sized quantities of American Plate for spot delivery at New York, Philadelphia and Baltimore are unchanged and rule about as follows : American Coke Tins, IC, 108 lbs., 14 x 20, Bessemer Steel, $3.50; do., 100 lbs., $3.40; do., 95 lbs., $3.35; do., 90 lbs., $3.30; American Charcoal Brights, Melyn Grade, IC, 14 x 20, $4.75; Allaway Grade, IC, 14 x 20, $4.25; American Charcoal Ternes, IC, 14 x 20, ordinary, $3.50. Foreign Plates are rather stronger; but little demand exists for the imported product, apart from purchases by the exporting packers and the oil men.

Chicago advices are as follows: A strong demand is experienced for Roofing Plates, but Bright Tin Plates are quiet, except Cokes, which are in demand for fruit cans. This demand, however, is coming from the large establishments making cans for the trade and not from the small tinners.

Sheet Iron.— The Sheet trade does not show any improvement, either in demand or prices. The proposed movement to close the Sheet mills for six weeks from July 1 has not received the sanction of some of the larger mills, and the movement will not be successful. Lower prices are named by a few mills and for specially attractive orders, but some mills that are well filled up refuse to shade their higher quotations. Prices on Galvanized Sheets are firm, and the demand well up to the average for the season. Jobbers quote small lots of No. 27 Common Iron at 2.35c. to 2.40c., and Galvanized Sheets at 75 and 10 and 5 to 80 per cent. off the list.

Chicago advices are as follows : Manufacturers' agents report a good inquiry for Black Sheets and a rather better trade in Galvanized, but at present the demand is mainly for small lots. Jobbers quote small lots of Black Sheets from stock at 2.25c. to 2.40c. for No. 27 and 80 to 80 and 5 off for Galvanized.

Old Metals.—The market is tame and prices irregular, although without quotable change. Yard dealers in this city and vicinity are paying about the following rates for moderate size lots, delivered here:

Heavy Copper	per lb. 9⅞c.
Light and Tinned Copper	per lb. 9¼c.
Heavy Brass	per lb. 6½c.
Light Brass	per lb. 5½c.
Lead	per lb. 3.35c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 3 ½c. to 3⅝c.
Zinc Dross in Slabs	per lb. 2.85c. to 2.90c.
No. 1 Pewter	per lb. 8 c.
No. 2 Pewter	per lb. 4½c.
Wrought Scrap Iron, per gross ton	$8 25
Heavy Cast Scrap, per gross ton	8.25
Stove Plate Scrap, per gross ton	5.75
Burnt Iron, per gross ton	4.25
Tin Plate Scrap, per ton	2.00

THE IRON MARKET.

Taking the country at large, developments in the Iron trade are not of a particularly satisfactory character. Prices continue low and there does not seem to be much prospect that the first condition which must precede any improvement in values—viz., ample employment in sight for the near future—will be fulfilled. Some of the large producers are inclined to regard the possibility of a lighter business with indifference, but others are displaying growing anxiety.

Of course the next week or two will bring quite a widespread restriction in output through the natural cause, that plants are closed down to make repairs and take inventories. Since this applies also to some foundries, it will, however, not aid the blast furnaces, whose work continues.

The manufacturers of Pig Iron for the open market are pretty well discouraged. While some of them have good contracts booked for forward delivery, a large number are facing the question of selling at present low prices or of blowing out, since the plan for co-operation to improve the market seems nearly hopeless with only 55 per cent. assenting.

Reports are current that there is some uneasiness in the Bessemer Pig Iron Association of the Central West.

The smaller rolling mill plants who do not control their own supply of Steel urge that Billets, Bars, &c., must come down to give them any chance to live at present prices for finished products. They insist upon figuring out a good profit to the Steel works at current quotations for Steel, and state that the producers of Steel are sacrificing a part or the whole of it in order to capture orders for finished material.

The near future is expected to clear the situation in Steel Billets, which have been nominal for some time. It is expected that large contracts will soon be placed and that a new price level may be established.

Pig Iron.—The New York market has been very quiet and prices continue low. We quote as follows: Northern brands, No. 1, $11 to $11.50; No. 2, $10.50 to $11; No. 2 Plain, $10 to $10.50. Southern brands, same delivery: No. 1, $10.50 to $10.75; No. 2, $10 to $10.25; No. 1 Soft, $10.25 to $10.50; No. 2, $10 to $10.25.

The Philadelphia Pig Iron market is described as extremely dull. Buyers appear to be absolutely indifferent to low quotations; if they need material they will take small lots to help them out; if they can do without buying for a week or two more they just wait until they can wait no longer. Sellers are, of course, getting more anxious than ever. They want to see some new business coming in, and until it does the pressure to sell will, no doubt, be as great as it is to-day. Prices are not materially different to what they were a week ago, and it is doubtful if holders would go below the inside quotations, but there are more sellers at inside figures than there were a week ago. Nominally, however, prices are about as follows, subject to the usual rebate for deliveries at points within a radius of 100 miles south or west: No. 1 X Foundry, $11.25 to $11.75; No. 2 X Foundry, $10.50 to $10.75; No. 2 Plain, $10 to $10.25.

In the Chicago market a light inquiry is reported for all brands of Coke Iron. Some expected business involving a good tonnage has not developed into actual orders. A good demad is noted for Charcoal Pig in small lots. Prices are firm on Soft Irons at the lower basis established by the Southern furnaces, but on Foundry grades concessions are still being made from our quotations. We quote for cash as follows:

Lake Superior Charcoal	$11.50 to $13.00
Local Coke Foundry, No. 1	11.50 to 12.50
Local Coke Foundry, No. 2	11.00 to 12.00
Local Coke Foundry, No. 3	10.50 to 11.50
Local Scotch, No. 1	11.50 to 13.00
Ohio Strong Softeners, No. 1	12.00 to 12.25
Southern Silvery	11.00 to 11.50
Southern Coke, No. 1	10.60 to 11.00
Southern Coke, No. 2	10.10 to 10.60
Southern Coke, No. 3	9.75 to 10.30
Southern, No. 1 Soft	10.25 to 10.75
Southern, No. 2 Soft	10.10 to 10.60

The Pittsburgh market is practically lifeless, and we have not been advised of any sales since our last report. While there is some dissatisfaction in the Pig Iron Association, it is not expected that it will cause its disruption. At a meeting held in Cleveland on Thursday, June 23, reports were submitted, showing amount of sales by each furnace and destination of the Iron. It is recognized that if the association would go to pieces prices of Iron would probably decline rapidly, but it is doubtful whether any more Iron would be sold. Outside of a large block of Pig Iron in the Valley, held by a local interest, there is very little to be had outside of that owned by the furnaces. Foundry Irons are dull. We quote, f.o.b. Pittsburgh: No. 1 Foundry, $10.50; No. 2 Foundry, $10; Standard Bessemer, $10.25 to $10.40.

Conditions have changed but very little in the Cincinnati district during the past week. The amount of business done in Southern Pig Iron, while not large or made up to any great extent of large orders, has been reasonably fair. Just what the market really is is very hard to say. There are no large inquiries in the field, and what Iron is selling is averaging somewhere near the quotations given herewith. If there has been any change at all since last week it has been due to weakness and not strength. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	to $9.75
Southern Coke, No. 2	to 9.25
Southern Coke, No. 3	to 9.00
Southern Coke, No. 1 Soft	to 9.50
Southern Coke, No. 2 Soft	to 9.25
Southern Coke, Gray Forge	to 8.50
Southern Coke, Mottled	to 8.50
Ohio Silvery, No. 1	$12.00 to 12.50
Ohio Silvery, No. 2	11.50 to 12.00
Lake Superior Coke, No. 1	11.00 to 11.50
Lake Superior Coke, No. 2	10.50 to 11.00

The St. Louis market has been fairly active during the past week, but prices are weak and unsettled. Buyers continue to purchase in moderate quantities, and while consumption is heavy, yet individual purchases continue to be light. We quote as follows for cash, f.o.b. cars St Louis:

Southern, No. 1 Foundry	$10.25 to $10.50
Southern, No. 2 Foundry	9.75 to 10.00
Southern, No. 3 Foundry	9.50 to 9.75
No. 1 Soft	9.75 to 10.00
No. 2 Soft	9.50 to 9.75

CHICAGO REPORT.

Scrap.—Heavy Melting Steel Scrap and Cast Scrap are in best demand. Other material is dull. Yard dealers' buying prices are as follows, Chicago delivery:

	Per net ton.	Per lb.
Country Wrought Scrap	$7.00	....
Machinery Cast	7.25	....
Malleable Cast	7.00	....
Stove Plate (free of burnt)	4.75	....
Burnt Iron and Grate Bars	3.75	....
Sheet Iron and Hoops	3.00	....
Plow Steel and Breaking Stock	5.00	....
No. 2, such as Shovels, Hoes, &c	2.50	....
Old Boilers—whole (Iron)	3.50	....
Old Boilers (Iron)—cut in single Sheets and Rings	6.50	....
Old Gas Pipe and Boiler Tubes	6.00	....
Cast Borings	3.25	....
Turnings	4.50	....
Horseshoes	8.50	....
Copper Wire and Heavy	....	10½c.
Copper Bottoms	....	9½c.
Copper Clips	....	10¼c.
Red Brass	....	9 c.
Yellow Brass	....	7½c.

Light Brass	5¼c.
Pipe Lead	3 c.
Tea Lead	3 c.
Zinc	3¼c.
Rubber	4 c.
Inside Bicycle Tubing	10c. to 12c.
Outside Tubing	4c. to 4¼c.
Garden Hose	$10.00 to $12.00 net ton.
Air Brake Hose	20.00 to 22.00 net ton.

Anthracite.—Business continues quiet. The schedule on carload lots of 12 tons minimum is as follows:

	Grate.	Egg, Sto. and Ch.
Chicago, Ill.	$5.00	$5.25
Milwaukee, Wis.	5.00	5.25
Kansas City, Mo.	7.00	7.25
Council Bluffs, Iowa	7.00	7.25
Lincoln, Neb.	7.15	7.40
Sioux City, Iowa.	7.50	7.75
Aberdeen, S. Dak.	8.25	8.50
Dubuque, Iowa.	6.30	6.55
Madison, Wis.	6.50	6.75
St. Paul, Minn.	7.50	7.75
Burlington, Iowa.	6.50	6.75
Des Moines, Iowa.	7.00	7.25
Davenport, Iowa.	6.30	6.55
St. Joseph, Mo.	7.00	7.25
Leavenworth, Kan.	7.00	7.25
Omaha, Neb.	7.00	7.25

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver	$6.50
Pueblo	6.50
Colorado Springs	6.50
Leadville	6.50
Cheyenne, Wyo.	7.50
All points between Denver and Missouri River	7.00

THE HARDWARE TRADE.

WHILE there is unquestionably a falling off in the volume of business, it is probably less than is usual at this season, when the national holiday, vacation time and the usual overhauling of factories, &c., all tend to diminish the attention of merchants and manufacturers to the marketing of goods. The demand is certainly considerably lighter than a few weeks ago, but in some sections it is still fair, and in the parts of the country where business is dull there is nevertheless a hopeful feeling which gives confidence to the manufacturers in the accummulating of their products in readiness for the fall trade. There is little doubt that the business of the past six months has been on the whole very satisfactory, notwithstanding the somewhat rude shock which was given it by the breaking out of hostilities and the attendant uncertainty. But as the successive events of the war have pointed to a successful and perhaps early issue, the tone of the market has more than recovered, and anticipations are freely expressed that an era of prosperity is awaiting the country both in its foreign and domestic trade. The question of freight rates, and especially the recently established differentials between carload and less than carload lots, which are alleged to give the large trade a much greater margin than heretofore, is engaging the attention of merchants in several parts of the country and promises to be an important one. Some of the retail merchants complain that the difference between the carload and less than carload rate is altogether unreasonable, and object to it as established in the jobbers' interest and to the injury of the smaller trade. The old questions of syndicate buying and department store competition are also receiving attention from the trade. Of more direct and practical importance to the individual merchants are questions of business management and the adoption of wise and energetic business methods. The entrance on the last half of the year gives a fitting opportunity for a careful review of the six months' business and the making of plans for the future in which the mistakes of the past will be avoided and experience utilized for the attainment of still larger results.

Chicago.—Shelf Hardware continues surprisingly active for the season. The demand is large for all classes of staple and seasonable goods. Manufacturers of the latter are beginning to catch up with their orders and not so much complaint is now heard of delayed deliveries. Jobbers call special attention to the scarcity of seasonable goods which developed last fall and this spring. They justly complain that retailers do not order enough goods in advance. They have been annoyed all this spring by the great difficulty in trying to supply the trade. Retailers have undoubtedly missed a great deal of business by not being able to promptly furnish their customers with what they wanted. The same trouble will undoubtedly be experienced next fall. Some buyers are forehanded and are placing their orders now for future delivery, but by no means the quantities which should come in. This is consipcuous in the case of Stove Boards, on which large orders have already been taken, but orders should now be coming in for Elbows, Coal Hods and other Sheet Iron goods. Quart cans at $3 per gross are making inroads on the tin shops that have usually done some business in making up cans for the local trade.

St. Louis.—The Hardware jobbing trade continues in a very satisfactory condition. The crop prospects improve daily and farmers continue to buy liberally. The demand for Shelf Goods is very heavy and in seasonable lines the demand is keeping up remarkably well. Some cessation in trade is looked for, however, as the summer season is now here and the usual midsummer dullness is expected. The rapid advance in Spelter has caused a decided stiffening in the price of Galvanized Iron, and Brass Goods have also been advanced.

NOTES ON PRICES.

Wire Nails.—The volume of business in Wire Nails has during the past week been of moderate dimensions. So near the end of the month and of the half year the trade generally are avoiding the purchase of any unnecessary goods. The manufacturers are, as a rule, wisely refraining from forcing sales and are disposed to carry the generally large stocks on hand in anticipation of a brisk demand within a month or two. Notwithstanding the sluggishness of business and the large amount of Nails in the warehouses of the different mills the tone of the market continues remarkably steady and manufacturers are indisposed to yield anything in price.

New York.—There is a moderate but, considering the season, a fair demand for Nails. Quotations remain as before, small lots from store selling at $1.55.

Chicago.—The demand is now running lighter. It will probably be of rather small dimensions for the next few weeks, covering the usual summer dullness. Manufacturers have shown a little greater disposition to sell, but buyers report that prompt shipments are not being made when they place orders for stocking up. Small lots continue to be quoted at $1.45,

St. Louis.—The market is without any particular change. The demand is only fair and prices remain unchanged. Jobbers report a fair trade and quote small lots from store at $1.55 to 1.60, base.

Cut Nails.—The arrangement between the manufacturers, to which we referred in our last issue, is regarded as having worked satisfactorily during the past week, the market consequently being fairly regular in the matter of price.

New York.—The market continues as before with only a moderate amount of business. Small lots from store are held at $1.30. Concessions are made from these prices in special cases.

Chicago.—No change has occurred in this line. Small lots from stock still sell at $1.35, the demand being light.

St. Louis.—The Cut Nail market is quiet. Jobbers ask $1.30 to $1.35, base, for small lots from store.

Barb Wire.—As usual at this season the Barb Wire market is inactive, but in view of the general tone of the market, the anticipation of good business in the near future and the good understanding that exists between the leading manufacturers prices are steady and the market is characterized by a rather firm tone.

New York.—There is comparatively little doing. Export business is naturally receiving a good deal of atten-

tion and the outlook for trade both at home and abroad is regarded as promising. Barb Wire in New York territory is quoted as follows: Four-Point Galvanized in small lots from store, $1.95 to $2.

Chicago.—Trade is diminishing but is still of good volume. The demand is so large that factories will continue running during July, making but a short stop for repairs. The factories are now making deliveries a little more promptly. Prices are unchanged. Small lots of Barb Wire are selling at $1.55 for Painted and $1.85 to $1.90 for Galvanized. Small lots of Smooth Wire are quoted at $1.35, with 30 cents advance for Galvanized.

St. Louis.—The demand is commencing to show some signs of falling off. Mills have had a most excellent trade for three months past and a falling off in the demand at this time is not entirely unexpected. Jobbers quote Painted at $1.60 to $1.65 and Galvanized at $1.90 to $1.95 for small lots from store.

Smooth Wire.—Several of the mills are still busy filling their orders for Smooth Wire. The volume of new business is only moderate, but the manufacturers are apparently satisfied with this condition of things, anticipating that they will have no difficulty in finding a ready market for their products during the next few months. The tone of the market remains firm.

Copper Rivets and Burrs.—U. T. Hungerford, 121 Worth street, New York, representing the principal manufacturers of Copper Rivets and Burrs, has issued under date of July 1 the following revised price-list, which is subject to a discount of 50 per cent. on Rivets and Burrs and 40 per cent. on Burrs only. Terms 60 days or 2 per cent. discount for cash in 10 days, with freight allowance of ½ cent per pound on the net weight of goods, f.o.b. factory or New York:

Copper Hose and Belt Rivets and Burrs.

Numbers	3 to 7 incl.	8	9	10	11	12	13	14	15
	Cents per pound.								
In bulk	49	50	52	54	56	58	60	65	70
Uniform lengths, packed in 1 or 4 pound boxes	49	50	52	54	56	58	60	65	70
Uniform lengths, packed in ½ or ¾ pound boxes	52	53	55	57	59	61	63	68	73
Uniform lengths, packed in ¼-pound boxes	55	56	58	60	62	64	66	71	76
Assorted lengths, ⅜ to ¾ inch, packed in 1-pound boxes	52	53	55	57	59	61	63	68	73
Assorted lengths, ⅜ to ¾ inch, packed in ½ or ¾ pound boxes	55	56	58	60	62	64	66	71	76
Assorted lengths, ⅜ to ¾ inch, packed in ¼-pound boxes	57	58	60	62	64	66	68	73	78

Tinning Rivets or Burrs net additional 2 cents per pound.

Lead Pipe, Sheet Lead, &c.—Under date June 28 the following advanced prices of Lead Pipe, Sheet Lead, &c., are announced, which are subject to the usual trade discount of 20 per cent.:

	Cents per pound.
Lead Pipe	6
Sheet Lead	7
Tin Lined Lead Pipe	12½
Block Tin Pipe	22

Bright Wire Goods.—The market for Bright Wire Goods continues in the rather unsatisfactory condition which has characterized it for some time. It is entirely open, there being no agreement between the different manufacturers in regard to prices, and as a result there is some irregularity, while prices, on the whole, are so low as probably to justify the manufacturers' reference to them as unprofitable. The market for small lots is represented by the quotation of discount 90 and 25 to 90 and 30 per cent.

Glass.—No decision has been reached by the manufacturers and workmen in regard to wages for the next fire. Meetings of the committees will be held from time to time until an agreement is reached. It is estimated that the close of this fire, June 30, will see a stock of Glass in manufacturers' and jobbers' hands of not over 1,250,000 boxes, against 2,000,000 boxes at the close of the fire a year ago. The majority of the factories have not worked over six months since they started last fall. A normal demand will deplete available stocks before the factories start and imported Glass will possibly have to be relied upon to supply the deficiency. Under such circumstances higher prices are probable. Summer dullness is affecting the local trade, the demand being light, though present quotations are being fairly well adhered to on the basis of 85 per cent. discount for less than carloads.

White Lead.—The demand for White Lead is considered good for the season of the year. Prices have not changed with the advance of Pig Lead, nor do manufacturers anticipate any variation in values in the near future. Dry Lead is moving more actively.

Red Lead.—The ordinary distribution keeps up in Red Lead at unchanged prices.

Linseed Oil.—Restricted demand and further decline in the price of Seed has resulted in a weak market and lower prices. City crushers have reduced their price for Raw Oil 2 cents. Boiled Oil is 2 cents per barrel higher than Raw.

Spirits Turpentine.—The market has fallen off ½ cent during the past week owing to free offerings and limited demand.

CONTENTS.

Editorials—	PAGE.
Our Tin Plate List	33
Profitable Philanthrophy	33
The Building Situation	33
Wireless Telegraphy	34
Odds and Ends	34
The Letter Box—	
Some Questions About a Blower System. Illustrated	35
Rating Cast Iron Boilers	36
Work on the Pacific Coast	36
Medals for Manual Training Schools	36
Sheet Metal Work—	
The Bliss Special Double Crank Press. Illustrated	37
Niagara Parallel Curve Shear. Illustrated	38
Sheet Metal Ornaments	38
Flashings	38
The Retail Store—	
Suspension Bridge Window Display. Illustrated	39
The Norris Light Refracting Oil Lamp. Illustrated	39
De Vore's Last Drop Lemon Squeezer. Illustrated	40
The Gilmore Grater. Illustrated	40
Ice Cream Packing Cans. Illustrated	40
Memoranda	40
Tin Plates—	
The *Metal Worker* Quarterly List of Tin Plate Works and Brands	41
The Pacific Coast Trade Lost to Wales	41
French Tin Plate Industry	41
Alphabetical List of Makers' Brands of American Tin and Terne Plate	44
Dealers' Special Brands	45
Scrap	47
New Stoves for 1898—	
Some New Bucks. Illustrated	48
Some New Round Oaks. Illustrated	48
The American Gas Range. Illustrated	49
The Glenwood B Ranges. Illustrated	50
Stove Trade Notes—	
Philadelphia Stove Trade	51
Advancing Stove Prices	51
A Salesman's Views on the Southern Stove Trade	52
The International Heater Company	53
The Eureka Combination Oven and Heating Drum. Illus.	54
Odd Plates	54
Heating and Plumbing—	
North End Union Plumbing Graduates	55
American and Advance Boilers	56
National State Vice-Presidents and Committees	56
A Plumber's Letter to the Editor	57
The Need and Value of Plumbing Regulations	57
Lead Plumbing	58
Myers' Brass Cylinder Pitcher Pumps. Illustrated	58
Engineers' Summer Meeting	59
Notes	59
The Bankruptcy Bill	59
Trade Report—	
Metal Market	60
The Iron Market	61
Chicago Report	61
The Hardware Trade	62
Notes on Prices	62
Metal and Miscellaneous Prices	64
Labor Exchange—	
Help and Situations Wanted	68

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JULY 1, 1898.

The following quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₱ lb, 40¢
100-lb lots.....₱ lb, 36¢
Aluminum Rods, from ¾-in. diam. to 1 in. diam.....₱ lb, 53¢
Aluminum Sheet, B. & S. gauge. In lots of 50 lbs or more.

	6-in.	14-in.	24-in.
Wider than.....	14-in	24-in.	30-in.
And including.....	₱ lb	₱ lb.	₱ lb.
Nos. 13 to 19.....	$0.38	$0.40	$0.43
" 20.....	.40	.42	.45
" 21 to 23.....	.42	.44	.47
" 24.....	.42	.46	.49
" 25.....	.43	.47	.50
" 26.....	.43	.50	.55
" 27.....	.44	.53	.58
" 28.....	.44	.53	.60
" 29.....	.45	.54	.65
" 30.....	.46	.60	.73

Note.—Lots of less than 50 lbs 5¢ ₱ lb extra.

Antimony—

Cookson.....₱ lb, 10½@11¢
Hallett's.....₱ lb 9½@10¢
Japanese.....₱ lb, 9½@10¢
U. S.....₱ lb, 9½@10¢

Brass—Planished.....net

Roll and Sheet.....30% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.
List Feb. 26, 1896.

Plain Round Tube.	Per lb.
¾-in. up to 2-in.	$0.35
⅝-in. up to ¾-in.	.33
½-in. up to ⅝-in.	.38
⅜-in. up to ½ in.	.41
5-16-in. up to ⅜-in.	.48
¼-in. up to 5-16-in.	.65
3-16-in. up to ¼-in.	1.00
⅛-in. up to 3-16-in.	1.50
Smaller than ⅛-in.	Special
3-in. and larger	Special
2-in. to 3-in., to No. 19, inclusive.	38

30% off.

Copper & Bronze Tubing—

3¢ ₱ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—

Galvanized, Nested.....80%
" Not Nested.....80%
" Locked Joints, Nested.....80%
" " Not Nested...80%
Tin.....70%

Spiral Riveted.

Galvanized.....50%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Bottoms, Pits and Flats ₱ lb 20¢ basis *Ingot.*
Lake.....18½¢
Ansonia Grade Casting.....12½¢
Planished.....net
Sheet and Bolt.....16¢ ₱ lb basis

Tubes—See *Seamless Brass Tubes.*

Eave Troughs—

List Feb. 1, 1895.
Lap or Slip Joint, Galvanized....80&10%
Lap or Slip Joint, Terne.....65%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Tin.....70&10%
Galvanized.....80%

Crimped Tubing.

Retinned or Galvanized.....35%

Stove Pipe—

Buffalo Four-Piece.

	4½	5	5½	6	7-inch.
No. 1.	$0.70	.77	.82	.87	1.05 per doz.
No. 2.	.61	.66	.71	.74	....

Elbows and Shoes—

Flat Crimp.
Tin.....35%
Galvanized.....35%

Corrugated. *Flat Crimp.*

Galvanized.....70&5%

Round or Square.
Tin.....70&5%
Galvanized.....70&5%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	Common American.	R. G. Cleaned American.
Nos. 10 to 16.....₱ lb, 2 00....		2.25¢
Nos. 17 to 21.....₱ lb, 2.10....		2.35¢
Nos. 22 to 24.....₱ lb, 2.20....		2.45¢
Nos. 25 and 26...₱ lb, 2.30....		2.55¢
No. 27.....₱ lb, 2.40....		2.65¢
No. 28.....₱ lb, 2.50....		2.75¢
American B. B.....₱ lb, 4¢		

Russia, Planished, &c.
Genuine Russia, according to assortment.....₱ lb, 10¼@10½¢
Do. Stained.....6¢@10¢
Patent Planished ₱ lb, A, 9¾¢; B, 8¾¢ net
Craig Polished Sheet Steel.....₱ lb 8½¢

Galvanized.

Nos. 10 to 16	₱ lb,	12¢
Nos. 17 to 21	₱ lb,	13¢
Nos. 22 to 24	₱ lb,	14¢
Nos. 25 to 26	₱ lb,	15¢
No. 27	₱ lb,	16¢
No. 28	₱ lb,	17¢
No. 29	₱ lb,	19¢
No. 30	₱ lb,	21¢

75&10&5@80% off.

36 in. 1¢ ₱ lb higher

Kerosene—See *Petroleum Products*

Lead—

American Pig.....4¼@4⅜¢
Bar.....5¢
Pipe.....6¢. 20%
Tin Lined Pipe.....12½¢. 20%
Block Tin Pipe.....22¢. 20%
Sheet.....7¢. 20%
Old Lead in exchange, 3½¢ ₱ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....40¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's, 100@500 lb.....6 ¢
Lead, Amn. White, in oil.....6 ¢
Lead, Red, bbls. and ⅛ bbls.....6 ¢
Lead, Red, kegs.....6 ¢
Ochre, American.....1½¢
Red Venetian, American.....1¾¢
Linseed Oil:
Raw, ₱ gal.....44¢
Boiled.....46¢
Spirits Turpentine:
In bbls.....28¢
In cases.....36¢
Putty:
In barrels and ⅛ bbls.....1¾@2¢
In tubs.....1¾@2¢
In tin cans.....2½@3¢
In bladders.....2@2½¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₱ lb 5¼¢
Clarified.....₱ lb 5 ¢
Accra.....₱ lb 4¾¢
Half Jack.....₱ lb 4½¢
Cecilia.....₱ 100 lb $4.85
Choice Red.....₱ 100 lb 4.60
(*Spot Oil*, ½c. ₱ lb *higher.*)

Petroleum Products—

In Barrels (Barrel Included).
Stove Gasoline.....₱ gal. 10@11¢
Kerosene.....₱ gal. 8¢

Pipe, Drain.....50%

Pipe, Spiral—

Galvanized.....60%
Tin.....60%

Registers—

List Dec. 20, 1897.
Black Japanned.....40&10%
White Japanned.....30&10%
Nickel Plated.....40&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze.....40%
Electroplated in Brass, Bronze or Copper.....40%

Roofing Material—

Asphaltum, Trinidad Refined, ₱ ton.....$30.00@$35.00
Asphaltum, Rock. ₱ ton.....$14.00
Coal Tar Felt, 1 ply, ₱ lb.....2¢
2 Ply Roofing, ₱ roll, 108 sq. ft.....$1.00
3 Ply Roofing, ₱ roll, 108 sq. ft.....1.35
Roofing Pitch, ₱ bbl.....$2.40@$2.50

Rosin—

Common and Good—Strained.
Rosin, C. & D.....₱ bbl. $1.49 @$1.50
Rosin, E. & F.....₱ bbl. 1.55 @ 1.65
Rosin, G. & H.....₱ bbl. 1.72½@ 1.77½
Rosin, I. & K.....₱ bbl. 1.85 @ 1.95
Rosin, M. & N.....₱ bbl. 2.05 @ 2.10

Seamless Brass Tubes—

Net List, Feb. 1, 1897.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, ₱ sqr.....$3.50@$4.50
No. 1 Bangor Ribbon.....3.00@ 3.25
Pen Argyle, ₱ sqr.....3.25@ 3.50
Peach Bottom, ₱ sqr.....4.75@ 5.60
No. 1 Chapman, ₱ sqr....3.00@ 4.25
Lehigh Slates, ₱ sqr.....3.25@ 3.80
Vermont:
Sea Green, ₱ sqr.....$2.45@$3.05
Purple, ₱ sqr.....3.75@ 4.00
Variegated Purple.....2.25@ 2.90
Unfading Green, ₱ sqr...3.50@ 4.00
Red, ₱ sqr.....8.50@10.50

Solder and Soldering Fluids— Solder—

⅛&¼ guaranteed.....11@11½¢
No. 1.....10@10½¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Acme Soldering Flux.
Per gal.....60¢

Concentrated Soldering Flux.
f. o. b. New York.
In barrels. ₱ lb.....4¢
Smaller quantities, ₱ lb.....5¢

Gedney's Soldering Fluid.
In carboys or barrels, ₱ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.

Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₱ lb.....3¢
⅛ bbls., about 300 lb, ₱ lb.....3½¢
Kegs, about 110 lb, ₱ lb.....3½¢
Kegs about 55 lb, ₱ lb.....4¢

Yager's Soldering Salts.
⅛ lb bottles, each.....30¢
Large quantities, ₱ lb.....40¢

Soldering Coppers—

Per lb.....17¢@18¢ net

Spelter—

Western Spelter.....5¾@6¢
Bertha (pure).....8⅛@8¾¢

Spiral Pipe—See *Pipe, Spiral.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove.*

Strainers, Conductor—

Galvanized.....60%

Tin Pigs and Bars—

Banca, Pigs. ₱ lb.....16¼¢
Straits, pigs, ₱ lb.....16@16¼¢
Straits, in bars, ₱ lb.....16¾@17¢

Tin Plates, American—

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland or Melyn Grade,	IC,	10 x 14 / 14 x 20	$4.75
" "	IX,	10 x 14 / 14 x 20	5.75
" "	IXX,	14 x 20	6.75
" "	IXXX,	14 x 20	7.75
" "	IXXXX,	14 x 20	8.75
" "	DC,	12½ x 17	4.25
" "	DX,	12½ x 17	5.25
Allaway Grade, IC,		10 x 14 / 14 x 20	4.25
" "	IX,	10 x 14 / 14 x 20	5.00
" "	IXX,	14 x 20	5.75
" "	IXXX,	14 x 20	6.50
" "	IXXXX,	14 x 20	7.25

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC,	10 x 14 / 14 x 20	$3.50 @ 3.60
" "	IX,	10 x 14 / 14 x 20	4.35 @ 4.45

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:
100 lb.....10¢
95 lb.....15¢
90 lb.....20¢
85 lb.....25¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance:

Standard Old Style, 36 to 40 lb coating...	$11.50 @ 13.00
Redipped, or Good Old Style, 20 to 30 lb coating...	10.00 @ 11.00
Worcester Grade, 12 to 14 lb coating...	8.00 @ 9.25
STP Grade, 10 to 12 lb coating...	6.75 @ 7.50

Boiler Plates, American—

IXX, 14 x 26..(112 sheets).....$9.10
IXX, 14 x 28..(112 sheets).....9.80
IXX, 14 x 31..(112 sheets).....10.85

Tin Plates, Imported—

Duty, 1½¢ ₱ lb.

Charcoal Plates, Bright—

Melyn and Calland Grade,	IC,	14 x 20	$5.00
" "	IX,	14 x 20	6.00
Allaway Grade,	IC,	14 x 20	4.25
" "	IX,	14 x 20	5.00

Coke Plates, Bright—

Steel Coke,	IC,	14 x 20	$4.25
	IX,	14 x 20	5.25

Terne Plates—

Worcester Grade, IC,	14 x 20	4.25
	20 x 28	8.50
Dean Grade, IC,	14 x 20	4.00
	20 x 28	8.00

Troughs, Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz.....18.00
Daisy Improved pattern, ₱ doz...18.00

Tubing—

Tin.....55% | Galvanized.....55%

Zinc—

600 lb casks ₱ lb.....6¾@7¢
Per lb.....7¼@7½¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of June 1, 1896.
Cast Iron Fittings, Black and Galvanized, Standard sizes.75&10@75&10&5%
Cast Iron Bushings and Plugs75&10@80%
Cast Iron Flanges.....75&10@75&10&5%
Malleable Iron Fittings.....60&10@60&10&10%
" " Bushings...75&5@75&10%
" " Unions75&10@75&10&5%
Wrought " Nipples.....75&10@80%
" " Couplings..75&5@75&10%
" " Long Screws.....75&5@75&10%

Cast Iron Soil Pipe—

Factory Shipments.
Standard.....70@70&10&5%
Extra Heavy.....75@75&1[illegible]&5%
Fittings.....75@75&10&5%

Wrought Iron Pipe—

Factory Shipments—List Jan. 29, 1895.
1¼ and less, Plain. ..57%
1¼ and less, Galv.....50%
1½ and larger, Plain.67%
1½ and larger, Galv..55%
Extra 5 tens& 5%@6 tens
Screw and Socket Joint Casing.....65%
Inserted Joint Casing.....60%
Boiler Tubes, 2¼ inch and smaller.72½%
" 2½ inch and larger 75%

Valves, Cocks, &c.—

Iron Body Valves.....75&5@75&10&5%
Air Cocks and Radiator Air Cocks.....75@75&10%
Soldering Unions.....75@75&10%
" Nipples.....75@75&10%
Brass Unions (Rough and Finished).....75&10%
Jenkins' Bros.:
Iron Body Valves, except Gate Valves 65@65&10%
All Iron Valves, except Gate Valves..60@60&10%
Iron Body Gate Valves.....60@60&10%
All Iron Gate Valves.....40%
Iron Cocks, all Iron....75&10@75&10&5%
" " with Brass Plugs..75@75&5%
Brass Globe, Angle and Cross Valves...75@75&5%
" " and Angle Valves, hose outlet.....70&10%
Brass Garden Hose Valves.....70&10%
" Horizontal, Vertical and Angle Check Valves.....75&5@75&10%
Brass Safety Valves.....75@75&5%
" " " Low Pressure.....70&10@75%
" Radiator Valves.....70&10@75%
" " " Jenkins65@65&10%
Brass Jenkins' Globe, Angle, Cross, Corner, Safety and Check Valves.....65@65&10%
Brass Jenkins' Gate Valves..60@60&10%
Brass Steam Cocks.....75@75&10%
" Gas Meter and Union Meter Cocks.....75@75&10%
Brass Fittings, Rough.....75&5@75&10%
" " Finished...75&5@75&10%
" Bushings.....65@65&10&5%

Plumbers' Brass Work—

List of December 7, 1896.
Ground Key Work:
Rough.....70&10@75%
Farnan's.....60&10&10@70%
Finished.....70@70&10%
Compression Work....70&10@70&10&5%
Chain Stays.....70@70&10%
Iron Boiler Couplings, Ground Face per set.....70@75¢
Basin Plugs.....65&10@70%
Sink or Bath and Wash Tray Plugs.....60&10@70%
Basin Clamps.....Wide range of prices

Bath Tubs—

Copper Lined Bath Tubs...50&10&5@60%
Galvanized Steel Enamel Bath Tubs, list of Oct. 20, 1897.....60@60&10%
Steel Clad Copper Lined Bath Tubs, list of Oct. 20, 1897.....50&10&5@60%
Porcelain Lined Iron Bath Tubs.....40&10@50%
Solid Copper.....40&10@50&5%

Boilers—

Galvanized Iron Range Boilers, 150 lb test, up to 52 gallons.....75@75&10%
Galvanized Iron Range Boilers, Extra Heavy, 24 to 52 gallons.60&10&10&70%

Sinks—

Cast Iron—

High list.....80&10%
Low list.....70&10%

Wrought Steel—

Columbus, Galv'd and Enameled.50&10%
Columbus, Painted.....30&10%
L. & G.....50&10%

Miscellaneous—

Earthenware, List of Dec 5, 1895.....70& 0@75%
Drawn Lead Traps, List of Aug. 1897.....50&10@60%

ALPHABETICAL LIST OF ADVERTISERS.

Adriance Machine Works.... 83
Ætna-Standard Iron & Steel Co..... 73
American Corrugating Co... 96
Amer. Electrical Heater Co.. 27
Apollo Iron & Steel Co..... 1
Atlanta Steel & Tin Plate Co. 75
Bangor Excelsior Slate Co.. 65
Barstow Stove Co..... 84
Beaver Tin Plate Co..... 73
Bell, W. C..... 82
Berger Bros. Co..... 71
Berger, L. D..... 83
Berger Mfg. Co..... 77
Bergstrom Bros. & Co..... 15
Bertsch & Co..... 82
Bibb, B. C. Stove Co..... 21
Bishop, G. E..... 79
Bliss, E. W Co..... 82
Blodgett, G. S. Co..... 23
Blumer-Doscher Mfg. Co.... 78
Bowers, L. M. & Co..... 71
Brand Stove Co..... 16
Bray, J. & Co..... 78
Bruce & Cook.....74&84
Buck's Stove & Range Co.7 to 11
Burgess Soldering Furnace Co..... 25
Burritt, O. W. & Bro..... 78
Burton, W. J. & Co..... 74
Cambridge Roofing Co..... 76
Canton Steel Roofing Co..... 76
Century Stove Co..... 1
Champion Washing Machine Co..... 31
Chautauqua Hanger Co..... 71
Cincinnati Corrugating Co.. 77
Cleveland Rule & Handle Co..... 25
Coe, Jas. A & Co..... 73
Colwell Lead Co..... 28
Connors, Wm..... 1
Cooney, Seiner & Co..... 71
Cooper & McKee..... 25
Cope, Geo. W..... 24
Cortright Metal Roofing Co.. 76
Cory, U. & Co..... 19
Crawford & Young..... 28
Curtis & Curtis..... 28
Desper, H. A..... 28
Detroit Smelting & Refining Co..... 69
Dixon, Jos. Crucible Co..... 75
Double Truss Cornice Brake Co..... 80
Drake, W. H..... 20
Duffy-Trowbridge Stove Mfg. Co..... 13
Eastwood Wire Mfg. Co..... 1
Eclipse Stove Co..... 21
Eller, J. H. & Co..... 77
Energy Mfg. Co..... 28
Excelsior Steel Furnace Co.. 20
Ferrosteel Co..... 22
Follansbee Bros. Co..... 75
Forest City Fdry. & Mfg. Co. 22
Fowler & Wolfe Mfg. Co..... 18
Frand, M. J. & Co..... 78
Friedenwald B os..... 25
Frink, I. P..... 84
Front Rank Steel Furnace Co..... 21
Galt, John & Sons..... 78
Garry Iron & Steel Roofing Co..... 76
Gem City Stove Co..... 4
Giessel, Henry & Co..... 23
Giblin & Co..... 17
Globe Iron Roofing & Cor. Co. 75
Globe Ventilator Co..... 72
Gobeille Pattern Co..... 24
Goodrich, Judson A. Co..... 1
Gordon, W. J..... 83
Gorton & Lidgerwood Co.... 1
Graff & Co..... 14
Greene, W. F..... 24
Griffing, A. A. Iron Co. 19
Gummey, McFarland & Co... 73
Gurney Heater Mfg. Co..... 17
Halliday, M.. 73
Hanson, F. B..... 28
Hart & Crouse Co..... 32
Highton, Wm. & Son..... 22
Hill, Whitney & Wood Co.... 31
Hoffman, Geo. W..... 24
Holton Iron Roofing Co..... 76
Howard Thermostat Co 16
Howson & Howson..... 69
Hussey, C. G. & Co..... 70
International Correspondence Schools..... 69
International Heater Co 3
Iron City Mfg. Co..... 76
I. X. L. Beer Pump Co..... 23
Jackson's Sons, W..... 24
Jenkins Bros..... 1
Johns, H. W. Mfg. Co..... 24
Johnson, E. J. & Co..... 78
Joliet Stove Works..... 13
Kansas Ci y Metal Roofing & Corrugating Co..... 72
Keen & Hagerty Mfg. Co..... 30
Keene, Geo. C. & Co..... 83
Kelly, Thos. & Bro 28
Kemp, C. M. Mfg. Co..... 26
Kieckhefer Bros. Co..... 31
Kieley, T..... 1
King & Walker Co..... 78
Koven, L. O. & Bro..... 24
Lalance & Grosjean Mfg. Co. 31
Lawrence-Letts Elbow Co... 23
Littleford Bros..... 75
Loth, W. J. Stove Co..... 15
Lyon, Conklin & Co..... 80
McClure & Co..... 84
McCullough Iron Co..... 74
McNeill, Thos. E. & Son..... 22
Magee Furnace Co.....1&32
March-Brownback Stove Co. 14
Marcy Stove Repair Co..... 24
Marlin & Co..... 72
Marston, I. G. & Co.. 28
Maryland Foundry Co..... 26
Mechanical Engineering Construction Co..... 26
Mersick, C. S. & Co..... 25
Meurer Bros. Co..... 72
Millar, Chas. & Son..... 84
Miner & Peck Mfg. Co..... 83
Mitchell Heater Co..... 19
Monroe Fdry. & F'ce Co..... 18
Montross Metal Shingle Co.. 76
Morton Tin Plate Co..... 74
Mt. Penn Stove Works..... 5
Mowry, W. C..... 20
Munsell, E. & Co..... 23
National Pipe Bending Co... 20
New York Iron Roofing & Corrrugating Co..... 76
Niagara Machine & Tool Wks 79
Northrop, H. S..... 78
Ohl, Geo. A. & Co..... 82
Osborn, J. M. & L. A..... 73
Ostrander, W. R. & Co..... 72
Parks & Parks..... 30
Paxton Hdw. Mfg. Co..... 29
Peck Bros. & Co..... 27
Peck, Stow & Wilcox Co 81
Pocock, Oliver..... 80
Presbrey Stove Lining Co.... 24
Proudman Bros..... 71
Rasner & Dinger..... 75
Richmond Stove Co..... 17
Ringen Stove Co..... 2
Robinson, J. M. & Co..... 83
Rochester Stamping Works. 70
Rudolphi & Krummel Mach. Works..... 79
Ruud Mfg. Co..... 20
Safety Furnace Pipe Co..... 16
St. Louis Stamping Co..... 30
Salem Nail Co..... 75
Sanborn, John..... 73
Saunders', D. Sons..... 28
Schlemmer, The Co..... 26
Schneider & Trenkamp Co... 6
Schratwiesers Metal Lath Works..... 75
Schwerdtle & Siebert..... 79
Seavey Mfg. Co..... 29
Shepard, Sidney & Co..... 22
Sheppard, Isaac A. & Co..... 1
Simonds Furnace Co..... 16
Sisson & Currier..... 27
Smith Co., H. B..... 19
Smith, W. A. & Co..... 71
Souther, E. E. Iron Co..... 75
Special Notices..... 69
Sperry, D. R. & Co..... 31
Springfield Cornice Wks.... 83
Stebbins, E. Mfg. Co..... 27
Steel Bath Mfg Co..... 27
Stiles, E. S. Press Co..... 79
Stiles & Parker Press Co..... 82
Stocking, E. B..... 69
Sturtevant, B. F. Co..... 1
Superior Foundry Co..... 18
Sykes Iron & Steel Roofing Co..... 76
Taylor Co., N. & G..... 84
Thorn Shingle & Ornament Co..... 78
Toledo Mch. & Tool Co..... 81
Troy Nickel Works..... 25
Tubular Heating & Ventilating Co..... 15
Valentine, M. D. & Bro. Co... 24
Van Range Co., John..... 6
Vedder Pattern Works..... 24
Vogel, William & Bros 29
Washburne, E. G. & Co...71&75
Wayne, Anthony Mfg. Co.... 29
Weir Stove Co..... 84
West Mfg. Co..... 81
Wheeler, E. S. & Co..... 1
Wheeler, W. A..... 81
Whelan, D. J..... 81
White, Thos. Stove Co..... 12
Williams Stove Lining Co... 1
Wilson, R. M. Mfg. Co..... 27
Winfield Mfg. Co..... 22
Wister, L. & R. & Co..... 84
Wood, Alan Co..... 74
Wood Co., W. Dewees..... 84

IT WILL PAY TO GET OUR PRICES FOR

Genuine Bangor Roofing Slate

BEFORE PLACING YOUR ORDERS.

BANGOR EXCELSIOR SLATE CO., - Easton, Pa.

QUARRIES AT BANGOR, PA.

CLASSIFIED LIST OF ADVERTISERS.

Acetylene Gas Generators.
Mechanical Engineering Construction Co , 63 5th Ave., N. Y.

Agate Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.

Aluminum Ware.
Hill, Whitney & Wood Co., Boston, Mass.

Architectural Ornaments.
Frand, Martin J. & Co., Camden, N. J.

Asbestos.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Bathtubs.
Maryland Foundry Co., Baltimore, Md.
Peck Bros. & Co., New Haven, Conn.
Steel Bath Mfg. Co., Detroit, Mich.
Wilson, R. M. Mfg. Co., Rome, N. Y.

Beer Pumps.
I. X. L. Beer Pump Co., Phila., Pa.

Blower System.
Sturtevant, B. F. Co., Boston, Mass.

Brass Sheets, Rolls, &c.
Hussey, C. G. & Co., Pittsburgh, Pa.

Bronze and Bronzing Liquid.
Griffing, A. A. Iron Co., 66-68 Centre St., N. Y.

Bug Exterminators.
Parks & Parks, Troy, N. Y.

Building Paper.
Kansas City Roofing & Cor. Co., Kansas City, Mo.

CanMakers' Tools and Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. & Co., Cincinnati, O.
Stiles, E. S. Press Co., Watertown, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.

Castings.
Forest City Fdry. & Mfg. Co., Cleveland, Ohio.

Ceilings, Metallic.
American Corrugating Co., St. Louis, Mo.
Berger Mfg. Co., Canton, O.
Cambridge Roofing Co., Cambridge, O.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Frand, Martin J. & Co., Camden, N. J.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
Northrop, H. S., 40 Cherry St., N. Y.
Souther, E. E. Iron Co., St. Louis, Mo.

Cellar Drainers.
Friedenwald Bros., Baltimore, Md.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Clean Out.
Crawford & Young, Boston, Mass.

Cocks, Ball, Basin and Stop.
Stebbins, E. Mfg. Co., Brightwood, Mass.

Coffee Pots.
Rochester Stamping Works, Rochester, N. Y.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
Berger Bros. Co., Philadelphia, Pa.
Bowers, L. M. & Co., Binghamton, N. Y.
Canton Steel Roofing Co., Canton, O.
Cincinnati Corrugating Co., Piqua, O.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Lyon, Conklin & Co., Baltimore, Md.
McClure & Co., Pittsburgh, Pa.
Marlin & Co., Pittsburgh, Pa.

Cooking Utensils.
Hill, Whitney & Wood Co., Boston, Mass.

Copper, Roofing and Cornice.
Gummey, McFarland & Co., Phila., Pa.
Hussey, C. G. & Co., Pittsburgh, Pa.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Keene, Geo. O. & Co., Cincinnati, O.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Robinson, J. M. & Co., Cincinnati, O.

Cornice Work, Galvanized Iron.
Garry Iron & Steel Roofing Co., Cleveland, O.
Marlin & Co., Pittsburgh, Pa.

Couplings. (*See Pipe Couplers.*)

Covering, Pipe and Boiler.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Crimping Machine.
Wheeler, W. A , Indianapolis, Ind.

Cuspidors.
Rochester Stamping Works, Rochester, N. Y

Cut Offs, Rain Water.
Cooney, Seiner & Co., Indianapolis, Ind.
Smith, W. A. & Co., Lima, Ohio.

Dampers.
Berger Bros. Co., Phila., Pa.
Greene, W. F., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Die Stocks.
Curtis & Curtis, Bridgeport, Ct.

Distillers, Water.
Ruud Mfg. Co., Allegheny, Pa.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y.

Dumb Waiters.
Energy Mfg. Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Bowers, L. M & Co., Binghamton, N. Y.
Eller, J. H. & Co., Canton, O.
Lyon, Conklin & Co., Baltimore, Md.
Marlin & Co., Pittsburgh, Pa.
Souther, E. E. Iron Co., St. Louis, Mo.

Eave Trough Hangers.
Berger Mfg. Co., Canton, O.
Chautauqua Hanger Co., Mayville, N. Y.
Proudman Bros., Meriden, Conn.

Eave Trough Machines.
Marlin & Co., Pittsburgh, Pa.

Elbows.
Giessel, Henry & Co., Chicago, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Winfield Mfg. Co., Warren, O.

Enameled Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.
St. Louis Stamping Co., St. Louis, Mo.

Expansion Tanks.
Koven, L. O. & Bro., 18 Spruce St., N. Y.

Fire Brick.
Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Furnace Cement. Asbestos.
Connors, William, Troy, N. Y.

Furnace Pipe and Fittings.
Carton Furnace Co., Utica, N. Y.
Excelsior Steel Furnace Co., Chicago, Ill.
International Heater Co., Utica, N. Y.
Safety Furnace Pipe Co., Detroit, Mich.
Springfield Cornice Works, Springfield, Mass.

Furnaces and Heaters.
Barstow Stove Co., Providence, R. I.
Bergstrom Bros. & Co., Neenah, Wis.
Bibb, B. C. Stove Co., Baltimore, Md.
Brand Stove Co., Milwaukee, Wis.
Carton Furnace Co., Utica, N. Y.
Cory, Uzal & Co., 210 Water St., N. Y.
Excelsior Steel Furnace Co., Chicago, Ill.
Front Rank Steel Furnace Co., St. Louis, Mo.
Giblin & Co., Utica, N. Y.
Graff & Co., 208 Water St., N. Y.
Griffing, A. A. Iron Co., 66-68 Centre St., N. Y.
Hart & Crouse Co., Utica, N. Y.
International Heater Co., Utica, N. Y.
Magee Furnace Co., Boston, Mass.
Monroe Foundry & Furnace Co., Monroe, Mich.
Mt. Penn Stove Wks., Reading, Pa.
Richmond Stove Co., Norwich, Ct.
Sheppard, Isaac A. & Co., Phila., Pa.
Simonds Furnace Co., 50 Cliff St., N. Y.
Superior Foundry Co., Little Falls, N. Y.
Tubular Heating & Ventilating Co., Phila., Pa.

Furnaces, Plumbers' and Tinners'.
Burgess Soldering Furnace Co., Columbus, Ohio.

Galvanized Ware.
Keen & Hagerty Mfg. Co. Baltimore, Md.

Gas Heaters. (*See Stoves and Ranges, Gas.*)

Gas Machines.
Kent, C. M. Mfg. Co., Baltimore, Md.
Mechanical Engineering Construction Co., 63 5th Ave., N. Y.

Granite Ware.
Kieckhefer Bros. Co., Milwaukee, Wis.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.
St. Louis Stamping Co., St. Louis, Mo.

Grates.
Jackson, W. Son, 246 Front St., N. Y.

Gutter Formers.
Whelan, Dennis, J., Troy, N. Y.

Hand Shear.
King & Walker Co., Madison, Wis.

Heat Regulators.
Howard Thermostat Co., Oswego, N. Y.

Heaters, Steam and Hot Water.
Barstow Stove Co., Providence, R. I.
Carton Furnace Co., Utica, N. Y.
Drake, W. H., Newark, N. J.
Excelsior Steel Furnace Co., Chicago, Ill.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
Griffing, A. A. Iron Co., 66-68 Centre St., N. Y.
Gurney Heater Mfg. Co., Boston, Mass.
Hart & Crouse Co., Utica, N. Y.
International Heater Co , Utica, N. Y.
Magee Furnace Co., Boston, Mass.
Mitchell Heater Co., Poughkeepsie, N. Y.
Mowry, W. C., Norwich, Conn.
National Pipe Bending Co., New Haven, Conn.
Richmond Stove Co., Norwich, Conn.
Smith Co., H. B., 135 Centre St., N. Y.

Heating and Ventilating Engineer.
McNeill, T. E. & Son, 122 W. 35th St., New York City.

Hollow Ware.
Kieckhefer Bros. Co., Milwaukee, Wis.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.
St. Louis Stamping Co., St. Louis, Mo.
Sperry, D. R. & Co., Batavia, Ill.

Hydraulic Rams.
Hanson, F. B., 175 Centre St., N. Y.

Ice Cream Dishers.
Seavey Mfg. Co., Boston, Mass.

Iron, Galvanized Sheet. (*See Sheets, Galvanized.*)

Iron, Planished Sheet.
Wood, W. D. Co., McKeesport, Pa.

Iron and Steel, Sheet. (*See Sheets, Iron and Steel.*)

Iron Shutters and Doors.
Garry Iron & Steel Roofing Co., Cleveland, Ohio.

Lath, Metallic.
American Corrugating Co., St. Louis, Mo.
Schratwiesers Metal Lath Works.

Lavatories.
Wheeler, E. S. & Co., New Haven, Ct.

Lawn Sprinklers.
Peck, Bros. & Co., New Haven, Conn.

Lead Pipe.
Colwell Lead Co., 63 Centre St., N. Y.

Lightning Rods.
Washburne, E. G. & Co., 46 Cortlandt St., N. Y.

Metal Ceilings. (*See Ceilings, Metallic.*)

Mica.
Munsell, Eugene & Co., 218 Water St., New York.

Milk Cans.
Kieckhefer Bros. Co., Milwaukee, Wis.

Oil Heaters. (*See Stoves and Ranges, Oil, Vapor and Gasoline.*)

Ovens, Portable.
Blodgett, G. S. Co., Burlington, Vt.

Patent Solicitors.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

Patterns.
Cope, Geo. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, Ohio.
Vedder Pattern Wks., Troy, N. Y.

Pig Iron.
Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Fitter and Crimper.
Blumer, Doscher Mfg. Co., Brooklyn, N. Y.

Pipe Joint.
Sisson & Currier, Worcester, Mass.

Pipe Joint Grease.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Pipe Testers.
Desper, H. A., Worcester, Mass.

Pipe, Water and Gas.
Millar, C. & Son, Utica, N. Y.

Plumbers' Tools, Specialties and Supplies.
Amer. Electrical Heater Co., Detroit, Mich
Barstow Stove Co., Providence, R. I.
Colwell Lead Co., 63 Centre St., N. Y.
Crawford & Young, Boston, Mass.
Desper, H. A., Worcester, Mass.
Kelly, Thos. & Bros., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Peck Bros. & Co., New Haven, Conn.
Schlemmer Co , Cincinnati, O.
Sisson & Currier, Worcester, Mass.
Stebbins, E. Mfg. Co., Brightwood, Mass.
Wheeler, E. S. & Co., New Haven, Ct.
Wilson, R. M. Mfg. Co., Rome, N. Y.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Potato Masher.
Vogel, Wm. & Bros., 37 to 47 S. 9th St., Brooklyn, N. Y.

Presses and Dies.
Adriance Mach. Works, Brooklyn, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Philadelphia, Pa.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. & Co., Cincinnati, O.
Rudolphi & Krummel Mch. Works, Chicago, Ill.
Stiles, E. S. Press Co., Watertown, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Toledo Machine & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.

Punching Machines.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Robinson, J. M. & Co., Cincinnati, O.

Radiators, Steam and Hot Water.
Fowler & Wolfe Mfg. Co., Phila., Pa.
Griffing, A. A. Iron Co., 66-68 Centre St., N. Y.
Gurney Heater Mfg. Co., Boston, Mass.
Smith, H. B. Co., 135 Centre St., N. Y.

Range Boilers.
Koven, L. O. & Bro., 18 Spruce St., N. Y.

Reflectors.
Frink, I. P., 551 Pearl St., New York.

Registers.
Excelsior Steel Furnace Co., Chicago, Ill.
Ferrosteel Co , Cleveland, O.
Highton, Wm. & Sons, Boston, Mass.

Roasters and Bakers.
Paxton Hdw. Co., Paxton, Ill.

Roofing, Terne.
Atlanta Steel & Tin Plate Co., Atlanta, Ind.

Roofing Cement and Paint.
Connors, Wm., Troy, N. Y.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Kansas City Roofing & Cor. Co., Kansas City, Mo.

Roofing Edger.
Bell, W. C., Syracuse, N. Y.

Roofing and Siding, Iron and Steel, Corrugated and Plain.
American Corrugating Co., St. Louis, Mo.
Berger Mfg. Co., Canton, O.
Bowers, L. M. & Co., Binghamton, N. Y.
Burton, W. J. & Co., Detroit, Mich.
Cambridge Roofing Co., Cambridge, O.
Canton Steel Roofing Co., Canton, O.
Cincinnati Corrugating Co., Piqua, O.
Coe, Jas. A. & Co., Newark, N. J.
Eller, J. H. & Co., Canton, O.
Garry Iron & Steel Roofing Co., Cleveland, O.
Globe Iron Roofing & Cor. Co., Cincinnati, O.
Gummey, McFarland & Co., Phila., Pa.
Holton Iron Roofing Co., Lisbon, O.
Kansas City Roofing & Cor. Co., Kansas City, Mo.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
Sykes Iron & Steel Roofing Co., Chicago, Ill.

Roofing Machines.
Pocock, O., Cincinnati, O.

Roofing Nails.
Salem Nail Co., 292 Pearl St., N. Y.

Roofing Seamers.
Burritt, O. W. & Bro., Weedsport, N. Y.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Roofing Slate.
Bangor Excelsior Slate Co., Bangor, Pa.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N. Y.
Johnson, E. J. & Co., 38 Park Row, N. Y.

Sad Irons.
Ferrosteel Co., Cleveland, O.

Schools and Colleges.
International Correspondence Schools, Scranton, Pa.

Scrap Metals.
Detroit Smelting & Refining Co., Detroit, Mich.

SEE ALPHABETICAL INDEX, PAGE 65.

Sheet Metal Machinery.
Adriance Mach. Works, Brooklyn, N.Y.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Keene, Geo. C. & Co., Cincinnati, O.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Pocock, O., Cincinnati, O.
Robinson, J. M. & Co., Cincinnati, O.
Rudolphi & Krummel Mch. Works, Chicago, Ill.
Stiles, E. S. Press Co., Watertown, N.Y.
Stiles & Parker Press Co. Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.
West Mfg. Co., Buffalo, N. Y.
Whelan, Dennis J., Troy, N. Y.

Sheets, Iron and Steel.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bruce & Cook, 186 to 190 Water St., N. Y.
Cincinnati Corrugating Co., Piqua, O.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Lyon, Conklin & Co., Baltimore, Md.
McCullough Iron Co., Wilmington, Del.
Morton Tin Plate Co., Cambridge, O.
Osborn, J. M. & L. A., Cleveland, O.
St. Louis Stamping Co., St. Louis, Mo.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood, W. D. Co., McKeesport, Pa.
Wood Co., Alan, Philadelphia, Pa.

Sheets, Galvanized.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Bruce & Cook, 186 to 190 Water St., N. Y.
Cinn Corrugating Co., Piqua, Ohio.
McClure & Co., Pittsburgh, Pa.
McCullough Iron Co., Wilmington, Del.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Alan Co., Philadelphia, Pa.

Shingles and Tiles, Metallic.
Berger Mfg. Co., Canton, O.
Burden, W. J. & Co., Detroit, Mich.
Cortright Metal Roofing Co., Philadelphia, Pa.
Iron City Mfg. Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.
Thorn Shingle & Ornament Co., Philadelphia, Pa.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. *(See Roofing and Siding.)*

Skylights.
Rasuer & Dinger, Pittsburgh, Pa.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 292 Pearl St., N. Y.

Slitting Shears.
Whelan, Dennis J., Troy, N. Y.

Snow Guards.
Halliday, M., East 9th St., N. Y.

Solder.
Bruce & Cook, 186 to 190 Water St., N.Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland O.

Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio.

Soldering Irons.
Amer. Electrical Heater Co., Detroit, Mich.
Hussey, C. G. & Co., Pittsburgh, Pa.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Steam and Gas Fitters' Supplies.
Curtis & Curtis, Bridgeport, Conn.
Kieley, T., 7-11 West 13th St., N. Y.

Steel Stamps and Stencil Dies.
Schwerdtle & Siebert, Bridgeport, Ct.

Stove Boards.
Cooper & McKee, Brooklyn, N. Y.

Stove Linings.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Forest City Fdry. & Mfg. Co., Cleveland, Ohio.
Gobeille Pattern Co., Cleveland, O.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe.
Berger Bros. Co., Phila., Pa.

Stove Putty.
Connors, Wm., Troy, N. Y.

Stove Repairs.
Marcy Stove Repair Co., 74 Beekman St. N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.
Greene, W. F., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Mersick, C. S. & Co., New Haven, Conn.

Stoves and Ranges.
Bergstrom Bros. & Co., Neenah, Wis.
Bibb, B. C. Stove Co., Baltimore, Md.
Brand Stove Co., Milwaukee, Wis.
Buck's Stove & Range Co., St. Louis, Mo
Century Stove Co., Dighton, Mass.
Duffy-Trowbridge Stove Mfg. Co., Hannibal, Mo.
Eclipse Stove Co., Mansfield, O.
Gem City Stove Co., Dayton, O.
Graff & Co., 208 Water St., N. Y.
Joliet Stove Works, Joliet, Ill.
Loth, W. J. Stove Co., Waynesboro, Va.
Magee Furnace Co., Boston, Mass
March-Brownback Stove Co., Pottstown, Pa.
Mt. Penn Stove Works, Reading, Pa.
Richmond Stove Co., Norwich, Ct.
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, Ohio.
Sheppard, Isaac A. & Co., Phila., Pa.
Van, John, Range Co., Cincinnati, O.
Weir Stove Co., Taunton, Mass.

Stoves and Ranges, Gas.
Ringen Stove Co., St. Louis, Mo.

Stoves and Ranges, Oil, Vapor and Gasoline.
Barstow Stove Co., Providence, R. I.
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, Ohio.

Tea Kettles.
Hill-Whitney & Wood Co., Boston, Mass.
Rochester Stamping Wks., Rochester, N. Y.

Tea Pots.
Rochester Stamping Works, Rochester, N. Y.

Tinners' Tools, Machines and Supplies.
Amer. Electrical Heater Co., Detroit, Mich.
Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa
Bertsch & Co., Cambridge City, Ind.
Bishop, G. E., Dowagiac, Mich.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
King & Walker Co., Madison, Wis.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
West Mfg. Co., Buffalo, N. Y.

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate. *(Mfrs. of.)*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Atlanta Steel & Tin Plate Co., Atlanta, Ind.
Beaver Tin Plate Co., Lisbon, Ohio.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Lyon, Conklin & Co., Baltimore, Md.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Morton Tin Plate Co., Cambridge, Ohio.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tinware.
Keen & Hagerty Mfg. Co., Baltimore, Md.
Kieckhefer Bros. Co., Milwaukee, Wis.

Tools and Machines, Steam and Gas Fitters'.
Curtis & Curtis, Bridgeport, Conn.
Saunders', D. Sons, Yonkers, N. Y.

Valves.
Eastwood Wire Mfg. Co., Belleville, N. J.
Goodrich, Judson A. Co., 120 Beekman St., N. Y.
Jenkins Bros., 71 John St., New York.

Ventilating Fans.
Giblin & Co., Utica, N.Y.

Ventilators and Chimney Caps.
Canton Steel Roofing Co., Canton, O.
Globe Ventilator Co., Troy, N. Y.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washtubs.
Keen & Hagerty Mfg. Co., Baltimore, Md.

Washers, Valves, &c.
Littleford Bros., Cincinnati, O.
Marston, I. G. & Co., Boston, Mass.

Washing Machines.
Champion Washing Machine Co., Cincinnati, O.
Wayne, Anthony Mfg. Co., Fort Wayne, Ind.

Waste Trap.
Crawford & Young, Boston, Mass.

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Kelly, Thos. & Bros., Chicago, Ill.
Peck Bros. & Co., New Haven, Conn.
Wheeler, E. S. & Co., New Haven, Ct.

Water Heaters.
Kemp, C. M. Mfg. Co., Baltimore, Md.
Ruud Mfg. Co., Allegheny, Pa.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Wire Working Machinery.
Rudolphi & Krummel Mch Works, Chicago, Ill.

SEE ALPHABETICAL INDEX, PAGE 65.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

Published Weekly at the Following Subscription Price:

TO ALL PARTS UNITED STATES, BRITISH AMERICA, AND MEXICO, - - - - - - $1.00 A YEAR.
TO POINTS IN ALL OTHER COUNTRIES, - - - - - - - - - - - 3.00 A YEAR.

RATES OF ADVERTISING:

ONE SQUARE (12 LINES, ONE INCH).

ONE INSERTION, - - - - - - -	$1.00	SIX MONTHS, - - - - - - -	$23.40
ONE MONTH, (5 times,) - - - - -	5.00	ONE YEAR, - - - - - - - -	41.60
THREE MONTHS, - - - - - - -	12.35		

Rates for larger spaces quoted on application.

DAVID WILLIAMS COMPANY, Publishers.

232, 234, 236 and 238 William Street, NEW YORK. 59 Dearborn Street, CHICAGO.

New York (Main Office), - -	232-238 William Street, - - - - - -	JOHN S. KING, General Manager.
Philadelphia, - - - - - -	Forrest Building, 117-119 South Fourth Street, - -	THOMAS HOBSON. Manager.
Pittsburgh, - - - - - -	Room 509 Hamilton Building, - - - - -	ROBERT A. WALKER, Manager.
Chicago, - - - - - - -	59 Dearborn Street, cor. Randolph, - - - -	J. K. HANES, Business Manager.
Cincinnati, - - - - - -	Rooms 22-24 Pickering Building, - - - -	HENRY SMITH, Manager.
St. Louis, - - - - - - -	Commercial Building, - - - - - - -	H. H. ROBERTS, Manager.
Boston, - - - - - - -	33 Mason Building, - - - - - - -	WALTER C. ENGLISH, Manager.
Cleveland, - - - - - - -	312 The Cuyahoga, - - - - - - - -	EZRA S. ADAMS, Manager.

BRITISH AGENCY: Office of *The Ironmonger*, 42 Cannon Street, London.

AUSTRALIAN OFFICES: Melbourne, 231 Elizabeth Street; Sydney, 114a Pitt Street.

Remittances should be made by draft, payable to the order of DAVID WILLIAMS COMPANY, on any banking house in the United States or Europe, or by P. O. Money Order on New York. When these cannot be obtained, postage stamps of any country will be received.

Newsdealers or Booksellers in any part of the world may obtain *The Metal Worker* through The American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

Entered at the Post Office, New York, as Second-class Matter.

LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A first-class CORNICE and SKYLIGHT MAKER, CUTTER and DRAFTSMAN to take charge of shop and work at bench; must thoroughly understand business outside and inside; state experience and salary expected. "A.," office of *The Metal Worker*, 232-238 William street, New York City. July 2

One good general SHEET METAL WORKER; a man who can get out and put a plain job of cornice and do slate work; married man preferred; steady work. Edward Jarrell, 68 West Main street, Lexington, Ky. July 2

Practical man to take charge of a small steel range factory in Philadelphia; we want a thorough working man and one who can take thorough charge and has practical experience in building range bodies and mounting same; state where last employed in this capacity, wages and other details. "Steel Range," office of *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. July 2

A good PRESSMAN; must be familiar with 1000-pound board lift drop hammer, smaller Peck lift hammers, and in making forces for same, besides being active in handling tin stock. Answer, stating age, experience and last two places employed. "Pressman," office of *The Metal Worker*, 232-238 William street, New York City. June 25

A practical CORNICE MAKER; Geo. Gunnison preferred; write at once. S M Casler & Co., 19 South Water street, Aurora, Ill. June 25

At once, an experienced CORNICE CUTTER and MAKER; steady employment to a good man. J N. McCausland & Co., 209-211 South Tryon street, Charlotte, N. C. June 25

An up-to-date HEATING MAN to canvas the trade for an up-to-date line of steam and hot water heating boilers in each of the following cities: Detroit, Chicago, Milwaukee, Indianapolis, Louisville, Minneapolis, Kansas City, St. Louis, Salt Lake City, Denver, Seattle, San Francisco; most favorable terms to hustlers. "X Y X," office of *The Metal Worker*, 232-238 William street, New York City. June 25

SITUATIONS WANTED.

A young man, with considerable office experience, desires a position with some manufacturing concern; best of references. W. F. Ruhl, Salem, Ohio. July 2

TRAVELING SALESMAN; young man 35 years old; ten years' experience on the road, selling the store and house furnishing trade; I can command a big trade in Pennsylvania, Delaware, Maryland, Virginia and West Virginia; can furnish A1 references. "Hustler," office of *The Metal Worker*, 232-238 William street, New York. July 2

By first-class all around mechanic as FOREMAN or otherwise; understands the manufacture of brass and iron goods, is thoroughly up to date in plating, polishing, latne and bench work, &c.; best recommendations; 25 years' experience. 1150 McGlynn avenue, Hamilton, Ohio. July 2

By a first-class cornice and skylight maker as FOREMAN and CUTTER with a good firm; has thorough knowledge of the business and will work to an employer's interest; can handle men to advantage; 25 years' experience. "K. O.," 765 De Kalb avenue, Brooklyn, N. Y. July 2

A first-class TIN and SHEET IRON WORKER with many years' experience, competent to take charge of workmen, would like to hear from person or corporation desiring the services of such a man. Chas. E. Leary, 26 Broadway, New York City. July 2

By a young man as BOOKKEEPER, bill clerk, shipping clerk or salesman; ten years' experience in the stove and tin business. J. P. Clark, 2217 Magazine street, Louisville, Ky. July 2

By a PLUMBER; first-class man; all around mechanic. W. T. Roche, 147 First avenue, New York City. July 2

By a first-class PLUMBER and GAS FITTER, a steady job; wages moderate. Edw. Murphy. 310 East Ninety-first street, New York City. July 2

As CLERK or BOOKKEEPER by a young man having a thorough knowledge of the plumbing supply trade in all its branches; have had 12 years' experience with first-class New York houses. W J Fitzgerald, 516 East Eighty-third street, New York City. July 2

By a first-class PLUMBER, both lead and brass worker; can do roofing, hot water, furnace and general work; first-class references. Jas. A. Reber, Station A, Boston, Mass. July 2

PLUMBER and PIPE FITTER, experienced on city and country work; can also repair gas and hot air pumping engines; wages moderate. "Smith," 1373 First avenue, New York City. July 2

By a first-class PLUMBER at moderate wages; city or country. T. C. Doyle, 620 East 160th street, New York City. July 2

By a first-class PLUMBER at moderate wages; city or country. Arthur Wickers, 1427 Third avenue, New York City. July 2

Young man, 19, with best of reference, desires position as apprentice in a plumbing shop. "H. C. R.," office of *The Metal Worker*, 232-238 William street, New York City. July 2

By a PLUMBER, GAS, STEAM and HOT WATER FITTER with some good shop or firm; can work on all classes of pipe, lead, iron or brass; is thoroughly educated in all modern sanitary laws; can figure from plans and specifications; willing to work for a fair salary for a permanent position; strictly sober and industrious; 20 years' experience; 40 years of age; married; can also do roofing, spouting and hot air work. "G. W. A.," office of *The Metal Worker*, 232-238 William street, New York City. July 2

By a first-class experienced PLUMBER; reference; wages moderate. Edw. Coffey, care S. H. C. Kemp, 19 City Hall place, New York City. July 2

By a first-class junior PLUMBER and GAS FITTER in city or country; wages $2.75 per day. James Byrne, 2187 Second avenue, New York City. July 2

As FOREMAN by a practical and theoretical machinist, die and tool maker, with executive ability to take charge of almost any class of mechanics and get out work in the most economical manner; over 20 years' experience in several branches of manufacturing. "W. W. W.," 245 Villa street, Elgin, Ill. July 2

By first-class experienced cornice maker as FOREMAN or to work at the bench. Thos. McNamara, 256 Ewen street, Brooklyn, N. Y. July 2

By a first-class TINNER; 28 years experience at inside and outside work; also do pipe fitting. A. Miller, General Delivery, Muncie, Ind. July 2

By a first-class PLUMBER, STEAM and HOT WATER FITTER; city or country; thoroughly experienced; sober and steady; references. Jno. McCabe, New Rochelle, N. Y. July 2

By a young man traveling in Ohio and Pennsylvania calling on hardware dealers, a line of black galvanized iron on commission; also any other line that there is a demand for by the hardware trade; references. "J. C.," 36 Murston court, Detroit, Mich. July 2

A young man, 28, single, desires position in a country shop near New York City; A1 man at furnace, range and roofing business; also good jobbing plumber; wages $2 per day. J Miller, 430 West Fifty-second street, New York City. July 2

By a first-class TIN and SHEET IRON WORKER, understanding furnace, range and roofing work in all branches; city or country; 15 years' experience; wages moderate. John Moran, 216 West Sixtieth street, New York City. July 2

By a married man, 38 years of age, strictly sober, with 20 years' experience in shelf hardware, mechanics' tools, stoves, paints, varnishes, &c., a situation as clerk, salesman or traveler in hardware, stove or paint business. "Hardware," 395 Cadieux street, Montreal, Canada. July 2

In a job shop by a TINSMITH; 25 years' experience; inside work preferred; steady and temperate; references. J A. Chamberlain, 21 Crown street, Worcester, Mass. July 2

By a first-class ELECTROPLATER; 12 years' practical experience; all finishes on brass, iron and other metals; fine stove work; had charge in largest concerns; temperate; best references. "P.," office of *The Metal Worker*, 232-238 William street, New York City. July 2

By a first-class TINNER; has been raised in tin shop and capable of doing all kinds of work; can do cornice work and slating. P. O Box 386, Lawrenceburg, Ind. July 2

By a TINSMITH, ROOFER and SHEET IRON WORKER; city or country. Lewis Kronovitz, 121 Columbia street, New York City. June 25

By a PLUMBER and GAS FITTER; nine years' experience; 27 years of age; best of references; willing to work city or country; sober and industrious. Robert Haven, 522 West Hudson street, Elmira, N. Y. June 25

By a SHEET METAL WORKER; over 20 years' experience in all branches; also understands heater and hot air furnace work and bicycle repairing; can estimate on work; sober and industrious. A. L. Smith, 619 Main street, Lynchburg, Va. June 25

On the Pacific Coast, to represent an Eastern stove or metal house, by an old-time tinner, hardware and stove SALESMAN. "Pacific," office of *The Metal Worker*, 232-238 William street, New York City. June 25

By a PLUMBER who is experienced on all kinds of plumbing work and jobbing; 28 years of age; single; willing to work for moderate wages. Thos. F. Burke, West Winsted, Conn. June 25

By a TINSMITH, all around mechanic, stove and furnace worker, a steady job in a country town; will work cheap for a good job; 36 years of age; married; steady and sober. "G. W. B.," 3052 M street, West Washington, D. C. June 25

As TINNER, by a young man 20 years of age, in a country town in Illinois or neighboring States; intelligent, industrious and temperate. Box 218, Odell, Ill. June 25

Young man would like position as CREDITMAN or SALESMAN; well acquainted in Philadelphia and other parts of the United States regarding standing of all consumers of tin plate, bars, copper metal, &c.; has had number of years' experience as creditman; also manager of office. "Wilson," office of *The Metal Worker*, 117 119 South Fourth street, Philadelphia, Pa. June 25

By a JAPANNER and ENAMELER as foreman with a first-class tin house or bicycle manufacturing company; understand all branches of the trade; can mix all shades of colors and all shades of lacquers to stand the press; can handle cheap help. "Japanner," office of *The Metal Worker*, 232-238 William street, New York City. June 25

As RESIDENT or TRAVELING SALESMAN, by a young man 29 years of age who has had seven years' experience as salesman in a stove and hot air furnace business; can furnish best of references. "J. G. I.," office of *The Metal Worker*, 232-238 William street, New York City. June 25

By a good all round TIN and SHEET IRON WORKER at inside and outside work; steady and sober; 20 years' experience; wages moderate. Geo. Beinkampen, 443 Main street, Paterson, N. J. June 25

By a first-class SALESMAN; can estimate on and sell all kinds of heating apparatus; 11 years' experience; understand plans thoroughly; steady position desired with good reliable firm. "W. F. S.," Eighth street and Columbus avenue, Philadelphia, Pa. June 25

By a young man, in a good plumbing shop to do jobbing; desires to finish trade; sober and reliable; can furnish good reference. Chas. F. Dwyer, 1003 McClure street, Marion, Ind. June 25

SALESMAN thoroughly acquainted with New England stove and tinware trade is open for engagement or would represent large manufacturing concern as New England agent on commission; best of references. "X. Y. Z.," office of *The Metal Worker*, 70 Kilby street, Boston, Mass. June 25

By an all around TINSMITH and ROOFER, heater, range and furnace work; 20 years' experience in all branches; wages $2 50 per day; steady work. John Buckley, 1825 Amsterdam avenue, New York City. June 25

By an experienced and energetic SALESMAN for steam and water boilers, combinations and furnaces; territory traveled, New England and Middle States, as far West as Pittsburgh. "W. J.," 1431 East Preston street, Baltimore, Md. June 25

By a young man, single, as PLATER; have had seven years' experience in the plating department of the Meriden Britannia Company, Hamilton, Ont., Canada. B. E. Webster, Meriden Britannia Company, Hamilton, Ont., Canada June 25

By a young man, 22 years of age, as TINSMITH and general workman; able to work from plans and lay out work; city or country. "L. A.," office of *The Metal Worker*, 232 238 William street, New York City. June 25

By young man, 31, single, ten years' experience as manager and buyer in hardware, plumbing and iron trade, desires position, clerical or otherwise, requiring active man; best of reference. P. O. Box 370, New York City. June 25

By a first-class PLUMBER; an all around workman; city or country. W. F. Roche, 147 First avenue, New York City. June 18

Special Notices.

Assignee's Sale.

STOCK, TOOLS AND GENERAL EQUIPMENT OF M. S. MYERS, Woodstock, Vt.

Furnaces, Stoves and general stock of Iron and Tin Ware. This stock is mostly new and of best quality. A full set of Plumbing Tools, Patterns, etc. One of the best chances for business in the State. The purchaser can lease the present shop, which is one of the best located for business in the town and is well equipped for running a large business. This shop has commanded a large trade in Furnaces and Heating appliances, which can be much extended. For particulars address

B. H. PINNEY, Assignee.

FOR SALE.

Cheap; six tons 2¼ in. x 3¼ in. No. 28 gauge galvanized clippings. Price 1c. per pound f.o.b. cars Wheeling, W. Va. Address

WHEELING CORRUGATING CO.,
Wheeling, W. Va.

WANTED.

An eight or ten foot Drop Power Cornice Brake, new or second-hand. Address, giving particulars,

"CASH BUYER,"
office of *The Metal Worker*, 232-238 William St., N. Y.

For Sale at a Bargain.

An established business of House Furnishing Goods and Hardware, with Tinshop. Stock inventory about $4000, together with brick house and stable on two lots of ground and all fixtures. Valued at $25,000; will be sold for $20,000 if disposed of at once. One third cash, balance on favorable terms. Established since 1864 in present location. Reason for selling, proprietor is compelled to retire from business owing to ill health.

GEO. MEURER, 233 Bay St., Stapleton, N. Y.

FOR SALE, CHEAP.

One 2½ inch Corrugator, Power Machine. Address HENRY SMITH,
22-24 Pickering Building, Cincinnati, O.

CORNICE.

A Cornice Cutter of several years' experience, who owns an 8 ft. Cornice Brake, would like to correspond with parties who have an established tin business and who would like to add the cornice business.

Address A. BAILEY, Box 205, Valdosta, Ga.

PATENT FOR SALE.

The John L. Holeton Patent No. 362,836, for slip joints, ends, etc, for eave trough, is for sale. This is the popular joint and end so largely manufactured and sold by the Niles Mfg. Co. It has about six years more to run. Parties desiring to purchase should address

W. H. SMILEY, Assignee, Niles, O.

WANTED.

One second-hand 30 in. Tin Folder. Address

TAYLOR HARDWARE CO.,
Jackson Center, Ohio.

FOR SALE.

Hardware, Plumbing, Heating and Tinware Business.

One of the largest stocks of goods and most prosperous concerns in the above line in Vermont. Making a specialty of the Plumbing, Heating and Steam-fitting line. Located in a city of 10,000 inhabitants and drawing from a large suburban Quarry and farming district.

The business employs from eight to ten men. A clean up to date stock. The store is one of the best in New England, with modern equipments throughout. The population has trebled in the past eight years, and is as good a location as can be found.

Two lines of Railroad and Electrics, Water, Sewers and Electric Lights. Address

PHELPS BROS.,
Barre, Vermont.

Excellent Business Opening.

Stock of an established business of stoves, furnaces, tinware, plumbing and gas appliances, doing a business of $75,000, soon to be sold at auction; located in a town of 10,000 inhabitants and with little competition; store to let. Two partners are recently deceased. For full particulars call on or address G. F. SHURTLEFF, 1799 Washington Street, Boston, Mass.

Special Notices.

FOR SALE.

1 10 ft. Double Corrugating Machine.
1 10 ft. Crimping Machine.
1 Paint Machine.
1 set 1¼ in. Curving Rolls.
1 set 2½ in. Curving Rolls.
1 set 2½ in. Side Corrugating Rolls.
1 set 1¼ in. Side Corrugating Rolls.
1 8-ft. Folder.
1 8-ft. Square Shears.
All in perfect order.

EBERTS BROS. CO., Ltd.,
192 High St., West, Detroit, Mich

For Sale Cheap.

Steel Range Plant with or without tools. Address "BUCKEYE," office of *The Metal Worker*, 232-238 William St., N. Y.

WANTED.

Stoves and Ranges and Furnaces in Exchange for elegant new 11-room Prairie Ave., Chicago, residence. Address "EXCHANGE" office of *The Metal Worker*, 59 Dearborn St., Chicago.

WANTED.

To act as distributing agent in the Middle States for some article connected with the Hardware business. Address "MEDIUM," office of *The Metal Worker*, 232-238 William St., N. Y.

FOR SALE CHEAP.

Pipe Cutting Machine made by The Cox & Sons Company, Bridgeton, N. J. Good as new. Size of dies 4 in., 4½ in., 5 in., 6 in., 7 in., 8 in, 10 in. Address

STEAM SPECIALTY CO.,
P. O. Drawer 41, New Haven, Conn.

For Sale at a Bargain.

The Stove, Tin and Plumbing Business, Stock and Fixtures of the late M. B. Vandusen. Old established stand in village center. Rare opportunity. Mrs. M. B. VANDUSEN, Southold, L. I., New York.

COPPER AND BRASS CLIPPINGS, BRASS BORINGS AND TURNINGS,

Scrap Copper, Brass, Lead, Zinc, etc., of every Description.

In writing for prices kindly give description and quantity of scrap.

DETROIT SMELTING & REFINING CO.,
Detroit, Mich.

ESTABLISHED 1853.

HOWSON & HOWSON,

Counsellors at Law,
Solicitors of Patents.

OFFICES:

PHILADELPHIA,
Forrest Building, 119 S. 4th St.
NEW YORK,
Potter Building, 38 Park Row.
WASHINGTON,
Atlantic Building, 928 F St.

PATENTS

U. S. and Foreign Secured.

Trade Marks and Copy Rights. **Twenty Years' Experience.** Send model or sketch and brief description of your invention for **Free** report as to patentability. Expert searches and opinions as to Scope, Validity and Infringement. Patent Causes Prosecuted and Defended. Practice in U. S. Supreme, Circuit and Circuit Appeals Courts, and U. S. Patent Office.

Send for "Plain Words about Patents," Free.
PATENT PRACTICE EXCLUSIVELY.
References Furnished on Application.
E. B. STOCKING, Attorney at Law,
611 F ST., N. W., WASHINGTON, D. C.

Special Notices.

FOR SALE. TINSHOP

near Washington, D. C. Work all the year round. Plenty of orders on hand. Also stock of tin and iron, horse, wagon, cart, etc. Price $300. Easy terms for the right party. Address VIENNA TIN WORKS, Vienna, Va.

SHEET METAL

Pattern Drafting.

Tinsmiths' Pattern Cutting, Plumbing, Gas Fitting, Electric Wiring and Bell Work

Studies are carried on at home without loss of time from work. Instruction and question papers are furnished free. Able instructors. Fees moderate.

$2.00 DOWN AND $2.00 A MONTH

Pays for a Technical Education at Home.

Also courses in Steam Engineering, Mechanical, Electrical, Civil, and Mining Engineering, Mechanical and Architectural Drawing, Chemistry, Shorthand, Bookkeeping, and English Branches.

ALL WHO STUDY GUARANTEED SUCCESS.

We have helped thousands to better positions and salaries. Send for free circulars, stating the subject in which you are interested.

THE INTERNATIONAL CORRESPONDENCE SCHOOLS,
Box 968, SCRANTON, PA.
Established 1891. 35,000 Students and Graduates.

A Manual of Practical Methods of Repairing Bicycles.

By S. D. V. Burr.

Cloth Bound. 166 Pages. 150 Illustrations.

THE BICYCLE is treated as a machine composed of many parts, each of which may be damaged to a greater or less extent. Each injury to each part is discussed fully, and the best methods of making the necessary repairs are explained thoroughly. The treatment of assembled parts, in such operations as brazing, nickel plating, enameling and the like, is described in detail.

Almost every topic is illustrated with one or more original engravings.

The book deals with the simplest and most useful appliances for repairing. It is in every way practical. It is recommended not only to manufacturers of bicycles, but more particularly to all those who handle bicycles, whether as dealers or repairers.

Price, Post-paid, One Dollar.

DAVID WILLIAMS COMPANY,
PUBLISHERS
232-238 William St., New York.

"SOMETHING NEW EVERY MONTH"—WATCH IT.

Write for Our Latest Catalogue, It is full of Good Things!

Largest Makers of Strictly High Grade NICKEL PLATED COPPER WARE in the World.

IMITATIONS ONLY SHOW THE DIFFERENCE.

ROCHESTER STAMPING WORKS, - 161-167 JONES ST. - ROCHESTER, N. Y., U. S. A.

C. G. HUSSEY & CO., Second Avenue, Pittsburgh, Pa.

Engravers' Plates, Copper Bottoms, large and small, Circles and Kettle Patterns, Copper Rivets, Nails and Wire, Soldering Coppers, Casting or Ingot Copper, Planished and Tinned, also Polished and Tinned Copper for Wash Boilers, etc. Cold Rolled Cornice Copper perfectly flat. Soft Sheet Copper for roofing and sheathing. Round, Square and Flat Copper Bars. Copper rolled to all thicknesses and cut to all sizes and shapes. Brass in Sheets, Rolls, Bars and Wire.

Pittsburgh COPPER AND BRASS Rolling Mills,

Second Avenue, Pittsburgh.

CARPENTRY AND BUILDING

Series No. 2.

Modern American Dwellings

With Constructive Details.

The Most Elaborate and Complete Volume of Plans Ever Brought Out for the Use of Architects, Builders and Home Seekers.

BY NUMEROUS ARCHITECTS.

A selection of thirty-seven designs of artistic suburban dwellings erected in various sections of the country, at a cost ranging from $2,000 to $5,000, and embracing floor plans, elevations and constructive details showing interior and exterior finish, all drawn to a convenient scale, together with brief extracts from the specifications.

Those who contemplate building a home will find this volume of great value. In connection with each design is given the necessary floor plans, elevations and constructive details as will enable any practical builder to execute the work. The plans are diversified in both the interior arrangement and external appearance, and will afford to persons of various requirements an opportunity to select a home suited to their taste and convenience.

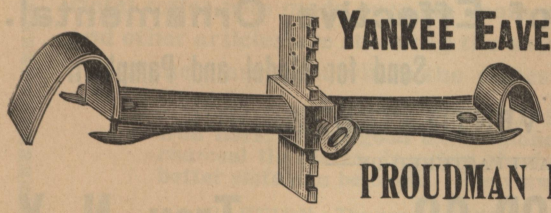
33 Half-Tone Engravings. 127 Full Page Plates of Elevations, Floor Plans and Constuctive Details. 40 Pages of Descriptive Text. Size 9 x 13 in. (oblong), Handsomely bound in cloth. PRICE $2.00.

DAVID WILLIAMS COMPANY, Publishers, - 232-238 William Street, New York.

CONDUCTOR PIPES,

EAVES TROUGH, ELBOWS, PATENT MITRES, TROUGH-ENDS, HANGERS, ETC.

L. M. Bowers & Co.,
MANUFACTURERS.
Binghamton, N.Y., U.S A.



YANKEE EAVES-TROUGH HANGERS
Save Time and Money.
Neat. Strong. Durable.
Send for Circulars and Prices.
PROUDMAN BROS., MERIDEN, CONN., U. S. A.

TINNERS' HARDWARE, ROOFERS' SUPPLIES.

If you need any **SNOW SHOE IRONS,** see ours before using any other. We make one for **Standing Seam Metal Roofs** and one for **Slate Roofs.** Efficient with or without wooden rail, as desired; also very ornamental.

Cast Iron Leader Shoes and Sewer Connections Main sizes in stock; specials to order.

We handle the **Gate City Furnace,** a good article for combined Tinners' and Plumbers' use. Weighs only 11 lbs., and is strong, convenient and economical with fuel.

Adams' Mechanics' Vises A good workshop vise with a movable jaw. Weight, 38 lbs. Jaws faced with steel, checked and hardened. Made to furnish with drill attachment when desired.

We carry a large stock of the well-known **FERROSTEEL REGISTERS,** and can fill all orders promptly.

Roofing Plates, Tarred Felts, Building Papers, Sheet Iron, Sheet Zinc, Roofing Paints—in fact, almost anything in this line. Manufacturers of **Pipe and Gutter**

Don't fail to include us in your list when writing for prices and information.

BERGER BROS CO.,

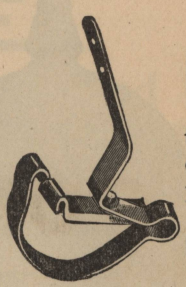
Factory—3114 N. 17th St., Office and Stores—231 and 237 Arch St.,

PHILADELPHIA.

The CENTENNIAL
WATER CUT OFF
FOR CISTERNS.

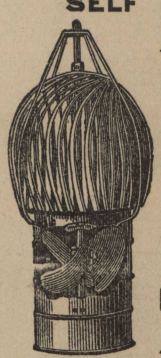
There are others, but none like or equal to the Centennial. It is the only Cut Off in the market to-day that can be used in any position without extra pipe or elbows. Try them and you will use no other.
For sale by all the leading jobbers.

Manufactured only by
COONEY, SEINER & CO.,
17, 19 and 21 E. South St., INDIANAPOLIS, IND.



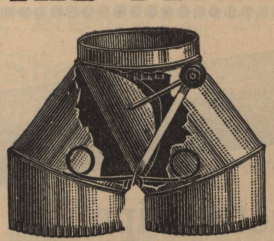
Chautauqua Eave Trough Hangers.
Made for any size trough. Write for circular and prices. Sample of any size sent free.
THE
CHAUTAUQUA HANGER CO.,
MAYVILLE, N. Y.

SELF LUBRICATING
Rotary Screw Ventilators
WHICH PRODUCE A
VACUUM BY ROTATION.



The only positive cure for Smoky Chimneys, Poor Draught and Ventilation. Adopted and used successfully on Private Residences, Greenhouses, Hotels, Breweries, Public Buildings, etc., etc. . . . . .
E. G. WASHBURNE & CO.,
MANUFACTURERS,
46 Cortlandt Street, New York.
☞ SEND FOR ILLUSTRATED CIRCULAR.

THE PERFECTION



RAIN WATER CUT-OFF.
Manufactured by
W. A. SMITH & CO., - LIMA, O.
Write for Prices.

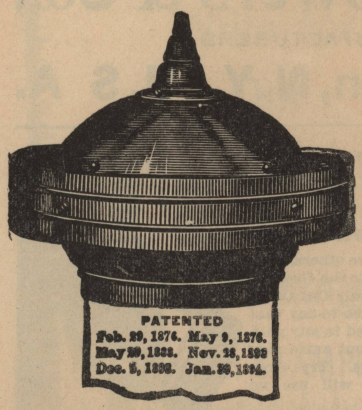
—WHY SHE WAITED.—"Who is that I see you feeding nearly every night in the kitchen, Mollie?"

"That's my intended, the policeman, ma'am."

"Well, if he's your intended, why don't you marry him?"

"I'm waitin' till his appetite goes down a bit, ma'am."—*Yonkers Statesman.*

"Globe" Ventilator.



Brass, Copper, Galvanized Iron and with Dome and Plate Glass Tops.

Simple, Stormproof, Effective, Ornamental.

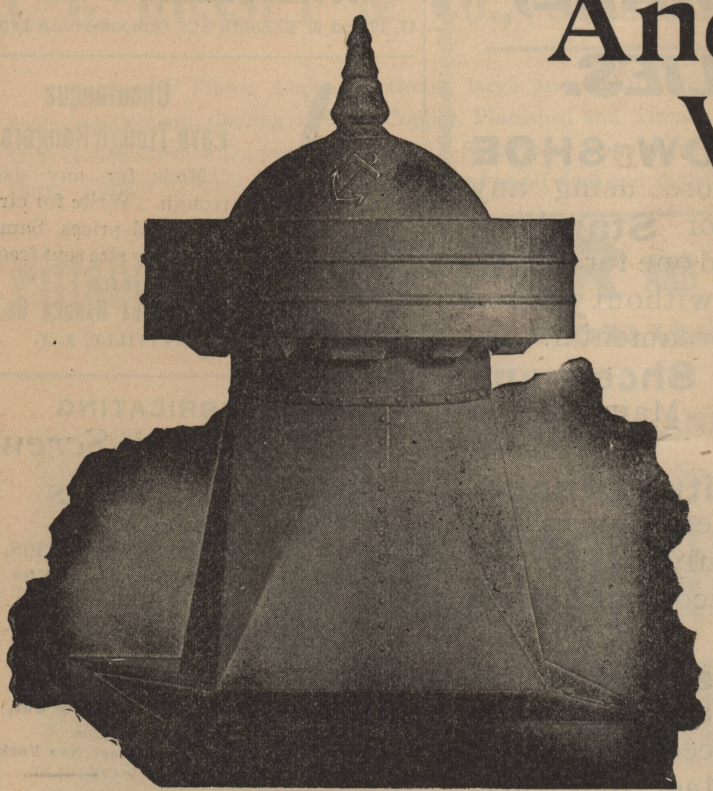
Smoky Chimneys Cured. Send for Model and Pamphlet.

Also "GLOBE VENTILATED RIDGING."

—MANUFACTURED BY—

GLOBE VENTILATOR CO., - Troy, N. Y.

Anchor . . Ventilators



ARE SUPERIOR TO ALL OTHERS.

Are stormproof and durable, and unexcelled for ventilating schools, churches, mills, factories, etc.

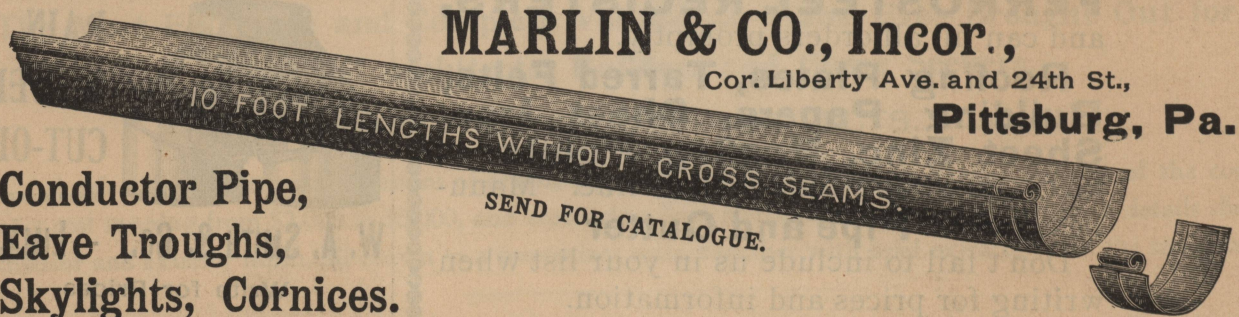
They Ventilate and prevent down draft and smoky chimneys.

Send for Catalogue and Prices.

MEURER BROS. CO.,

569-577 Flushing Avenue, - - Brooklyn, N. Y.

MARLIN & CO., Incor.,



Cor. Liberty Ave. and 24th St.,

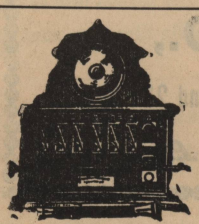
Pittsburg, Pa.

Conductor Pipe,
Eave Troughs,
Skylights, Cornices.

ROOFING . . .

Steel Standing Seam, Corrugated, V Crimp, Ruberoid. *Ark Brand Prepared Felt*, Heaviest, Strongest, Best.

Mixed ready for use. Glossy black finish. One gallon will cover 500 square feet of surface. One coat will last five years. Write for prices. The Kansas City Roofing & Cor. Co., 416 Delaware St., Kansas City, Mo.



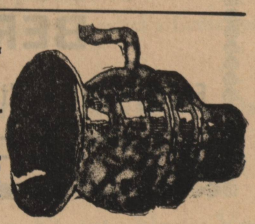
W. R. OSTRANDER & CO.

22 DEY STREET, NEW YORK,

Manufacturers of

Speaking Tubes, Whistles, Elbows, Oral Annunciators, Bell and Electric Wire Tubing,

Complete outfits of Speaking Tubes, Whistles, Pneumatic Bells, &c. A full line of Speaking Tube Hardware constantly on hand. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, L. I. Catalogues on application



A Guarantee

will impress people very much more than mere "talk." You may talk for hours to a customer in your endeavor to sell him tinware, to convince him that your ware will stand the service he requires of it, but unless you give your guarantee to back up your statements, he is not impressed. You have found out that it is not safe to guarantee tin plates, but that is because you have not tried GUMMEY'S ANTI-PINHOLE BRIGHT TIN PLATES. Use these plates in your ware, and you can safely guarantee any article you make from them to outlast ware made from any other plates. Hotel coffee pots made over six years ago from these plates are still in use. Tea kettles, boilers, and other articles are standing the same test. You hardly need better proof, and the wear is all due to the manner in which the plates are made.

GUMMEY'S ANTI-PINHOLE BRIGHT TIN PLATES are made from Genuine Charcoal Iron Bars, by the good old-fashioned hand methods employed 50 to 75 years ago in making charcoal tin plates, insuring absolute freedom from pinholes. No better plate *is* made; no better plate *can* be made. For tinware or roofing they are unequaled.

CAUTION.—The name "GUMMEY" is burned in the boxes containing these plates. Refuse any box with this name omitted from the brand.

GUMMEY, McFARLAND & CO., PHILADELPHIA.

SOFT STEEL.

Sheet and Blackplate Bars, Blooms and Billets.

SHEET METALS & MERCHANT BARS.

BLACK,
PAINTED,
GALVANIZED,
Plain and Formed Sheets.

Inquiries Solicited.

Tees, Angles,
Channels,
Hexagons,
Light Rails

ÆTNA STANDARD IRON & STEEL CO. BRIDGEPORT, OHIO.

WE MAKE

TIN PLATES.

THE BEAVER TIN PLATE CO.
LISBON, OHIO.

JAMES A. COE & CO.,

Nos. 106 and 108 Mulberry Street, Newark, N. J.

Iron and Steel, Structural Iron, Galvanized Sheet Iron, "Coe Old Style" Roofing Plate, Corrugated Sheet Iron, Heavy Hardware.

Best Roofing Plate Made.

OSBORN'S GUARANTEED I C OLD STYLE

Is made of best American Open Hearth Soft Steel Sheets.
Is heavily and evenly coated by hand.
Is not passed through any rolls.
Is resquared and carefully sorted.
No wasters under this brand.

We have just been awarded contract to furnish this brand for the new East High School building at Columbus, O.

J. M. & L. A. OSBORN, - - CLEVELAND, O

DUGAN'S PATENT
SNOW GUARDS FOR SLATE AND OTHER SLANTING ROOFS
SEND FOR ILLUSTRATED CIRCULAR & PRICE LIST.
M. HALLIDAY,
SOLE PROPRIETOR AND MANUFACTURER.
218 EAST NINTH STREET, NEW YORK.

JOHN SANBORN
DEALER IN METALS,
and manufacturer of Refined Metal Solder, Wire Solder, Piano Key Leads, Babbitt Metal, Pig and Bar Lead.
217 Water Street, Near Beekman Street. NEW YORK

To hang up in the shop for handy reference.

Metal Worker Shop Cards.

25c. Each, or Per Set 60c.

No. I. **Quantity of Tin for Roofs (revised).** Giving the number of boxes and sheets required to cover roofs of various sizes, ranging from 10 to 10,000 square feet.

No. III. **Diameters, Areas and Circumferences of Circles.**

No. V. **Capacity of Cylinders in United States Gallons.**

Sent, post-paid on receipt of price.

DAVID WILLIAMS COMPANY,

PUBLISHERS,

232-238 William St., New York.

"CAMBRIDGE" COKE TIN.
WELL COATED. EVEN WEIGHT.
FLAT DUCTILE. WELL ASSORTED.
BRIGHT CHARCOAL TIN.
TERNE PLATES
STOVE PIPE SHEETS.
NONE BETTER MADE.
MANUFACTURED BY
THE MORTON TIN PLATE CO.
CAMBRIDGE, OHIO.

The
BEST ROOFING
is our indestructible "Eastlake" Metallic Shingles or Slating—ornamental and cheap. We also furnish ordinary Iron, Steel and Galvanized Roofings, Gutter, Conductor Pipe, Tin Plate, Oil Cement, "Excelsior" Red Iron Ore and Graphite Paint, Roofing Sundries, Cornices, Skylights and Metallic Ceilings.
W. J. BURTON & CO.,
Detroit, Mich.

GENUINE AMERICAN CHARCOAL COMMON **IRON** RUSSIA PLANISHED CLEANED CLEANED

B. B. Galvanized Sheets,
Cold Rolled Soft Steel,
Sheet Zinc, Sheet Copper, Wire,
Corrugated and Plain Leader,
Galvanized Eave Trough,
Stove Pipe, Dampers, Bolts, Collars,
Elbows.

SOLDER.

ROOFING TIN, all grades.
BRIGHT TIN PLATES.

BRUCE & COOK,
186, 188, 190 Water Street,
248, 250 Pearl Street,
NEW YORK.

McCULLOUGH IRON CO.,
SHEET IRON MANUFACTURERS,
WILMINGTON, DEL.

Best Charcoal Bloom Galvanized Sheet Iron, "McCullough Iron Co." Eagle Brand.
Galvanized, Corrugated, Straight or Curved. Harvey's Patent Cleaned Black Iron.
Painted Corrugated Roofing and Siding.

Business Established, 1826. **ALAN WOOD COMPANY,** Incorporated, 1886.
Manufacturers of Sheets and Light Plates of Iron and Steel.
BLACK AND GALVANIZED.
General Office and Warehouse, 519 Arch Street, Phila. Schuylkill Iron Works, Conshohocken, Penna.
SPECIALTIES.—Patent Planished, Locomotive Jacket, Corrugated, Bath Boiler, Gas Holder, Swede and Norway Sheets, Blue Annealed, Best Bloom, M. F., A. W. Clean, Cold Rolled Sheets, Pickeled and Cold Rolled Sheets, Best Last, Water Pipe and Light Plates, Electrical Iron and Steel.
The only *manufacturers* of sheets having a warehouse in Philadelphia, where we invite the trade and consumers to inspect our large and well assorted stock. **Bourse Exhibit, Section "G," 34 to 38.**

Write Us for prices on CONDUCTOR PIPE, EAVE TROUGH, RIDGE ROLLS. Large Stocks and Quick Shipments.

FOLLANSBEE BROTHERS COMPANY,

Offices and Warehouses, 328, 330 and 332 SECOND AVE., PITTSBURGH, PA.

TIN ATLANTA TERNE

The Worcester Grade Terne Plate we are now making is a really fine plate. It has a very smooth finish. Coating is as even on the sheet as a coat of varnish, could not be more even if it was put on with a brush.

Are sorted very close.

All made from Open Hearth Steel. Are Annealed Dead soft, pliable and easy for a Roofer to work. Every sheet made with "No-Acid Flux." Boxed attractively.

We would like very much to have you try these plates. We feel sure you and your customers will be pleased with them, for they really have merit.

1435 MONADNOCK BUILDING, CHICAGO OFFICE.

Atlanta Steel and Tin Plate Co.
ATLANTA, IND.

COPPER LIGHTNING RODS.

ABSOLUTE PROTECTION from LIGHTNING is given by use of our continuous copper conductors.

E G. Washburne & Co., 46 Cortlandt St., New York.

Work put up or material furnished.

"BLACK HAWK" TERNE PLATES.

The best low-priced roofing plate on the market, but if you want the very best try our "Arrow" old style.

E. E. SOUTHER IRON CO.,
ST. LOUIS.

USE "GLOBE" BRANDS.

They are Standard for High Quality.

GALVANIZED AND STEEL ROOFINGS AND SIDINGS.

GALVANIZED, FLAT AND "B" STOVE PIPE SHEETS.

Write for Latest Catalogue and Prices.

THE GLOBE IRON ROOFING & CORRUGATING CO.,
Box 732, Cincinnati, O., U. S. A.

No. 8, Large Hole.

Full Size. CONCAVE.

LEAD WASHERS

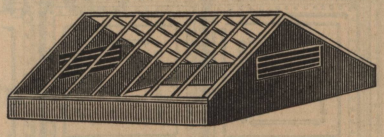
FOR PUTTING ON SHEET METAL ROOFING OR SIDING.

No. 12, Small Hole

Full Size. CONCAVE.

They Positively Prevent Leakage and Rust at Nail Head, thus making a Perfectly Water Tight Joint and more durable job. Liberal discount to the Hardware and Roofing Trade. Send for circulars and prices. LITTLEFORD BROS. Sole Mfrs. 453, 455 & 457 E. Pearl St. Cincinnati, O.

RASNER & DINGER,



Manufacturers of HAYES' PATENT

Metallic Sky-Lights,

Galvanized Iron Cornices and all kinds of Architectural Sheet Metal Work. Tin and Iron Roofers.

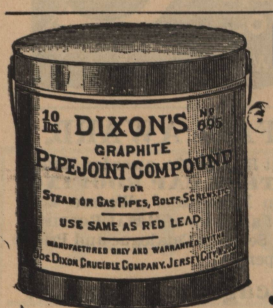
Second Ave. & Ferry St., Pittsburgh, Pa.

SCHRATWIESER'S METAL LATH WORKS.

PATENT SHEET METAL LATH

THE KEY A DOVETAIL.

110-112-114 Navy St., Bklyn. Tel., 2054 Bk.



UNEQUALED!

For joints of all kinds—steam, water or gas—you will find Dixon's Pipe Joint Compound absolutely unequaled. Far cheaper and far better than red lead. Sample free.

Joseph Dixon Crucible Co., Jersey City, N.J.

SALEM NAIL CO.

Wilbur & Potter, 292 Pearl St., New York.

Manufacture every size and kind of Black Tinned, Galvanized, Copper, Composition, Zinc and Lead,

Slate and Tin Roofing Nails,

At lower prices than any other house.

SLATERS' TOOLS, - - ALL KINDS.

The Canton Steel Roofing Company,

CANTON, OHIO.

Manufacturers of

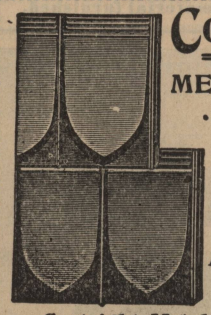
STAMPED METAL CEILINGS

Cornices, Skylights, Fireproof Shutters and Doors, and all kinds of Sheet Metal Goods.

Write for latest Catalogue and Prices.

The New York Iron Roofing and Corrugating Co.

Finest and Largest Variety of Sheet Metals. Products manufactured in the U.S. — FIRST & WASHINGTON STS. JERSEY CITY, N.J.



Cortright METAL . . . SHINGLES

Are recognized as the best, both in Construction and Material used

Illustrated Catalogue, Prices and Samples free.

Cortright Metal Roofing Co.

50 N. 23d St., Phila. 134 Van Buren St., Chicago.

WRITE FOR PRICE LIST No. 19 AND OUR 1897 CATALOGUE

162 Merwin Street,

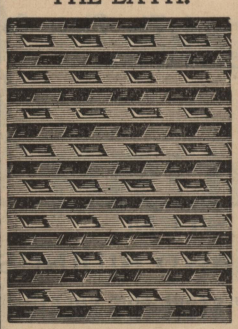
THE CAMBRIDGE ROOFING CO.,

CAMBRIDGE, OHIO.

Manufacturers of

METAL ROOFING,
SIDING AND CEILING,
EAVE TROUGH,
CONDUCTOR PIPE,
ROOF PAINTS, &c.

THE LATH. THE KEY.



AMERICAN METALLIC LATH ROOFING,

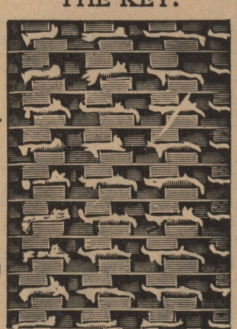
Siding, Stamped Ceiling, Galvanized Iron, Tin Plate, etc.

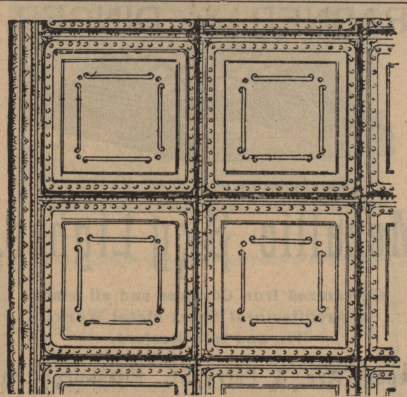
Send for our prices before placing your orders.

AMERICAN CORRUGATING CO.,

200-2-4-6 and 8 Barry St.,

ST. LOUIS, MO.





Steel Ceilings and Metal Shingles.

Iron and Steel Roofing.

IRON CITY MFG. CO.,

PITTSBURGH, PA.

Send for Catalogue.

FOR **ROOFING** USE OUR **METAL SHINGLES,**

VERY EASILY APPLIED, DURABLE, ORNAMENTAL, WATER AND FIRE-PROOF.

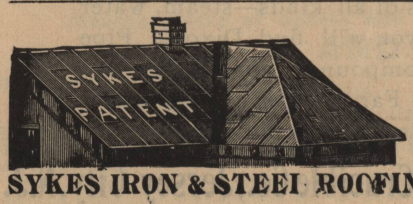
PRICES, TESTIMONIALS, AND OUR 1897 CATALOGUE FREE FOR THE ASKING.

Write to Nearest Factory { MONTROSS METAL SHINGLE CO., cor. Erie and Second Sts., Camden, N. J.
{ E. VAN NOORDEN & CO., 383 Harrison Ave., Boston, Mass.

HOLTON ROOFING SIDING, IRON ROOFING CEILING &c. CO.

LISBON, OHIO.

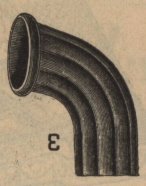
AGENTS WANTED EVERYWHERE



WORLD'S FAIR AWARD.

We are the only Steel Roofing Co. awarded **Medal** and Diploma for **PATENT CAP ROOFING** at World's Columbian Exposition. We are also large manufacturers of all styles of METAL ROOFING, SIDING, CEILING, ETC. Send for Catalogue and Price List. Mention this paper.

SYKES IRON & STEEL ROOFING CO., • Chicago and Niles, O.

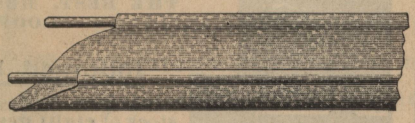


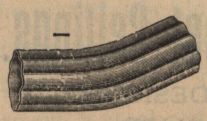
Conductor Pipe,

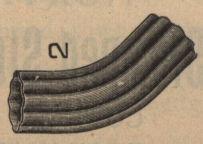
ELBOWS SHOES...

Round or Square—Galvanized. Write for Special Circular and Prices.

THE CINCINNATI CORRUGATING CO.,
BOX 314, PIQUA, OHIO.







J. H. ELLER & CO.,

MANUFACTURERS OF

STAMPED METAL CEILINGS, GALVANIZED CORNICE, ORNAMENTAL CRESTINGS, FINIALS, ETC., GALVANIZED IRON SKYLIGHTS.

STEEL ROOFING,

Pressed Steel Brick and Rock Face Siding,
Corrugated Iron, Siding and Roofing.

Galvanized Steel Eaves Trough and Conductor Pipe.

WRITE FOR CATALOGUE AND PRICES.

Eave Trough Hangers, Cut-offs, etc. Office, 194 E. Fifth Street, **Canton, Ohio.**

Berger's — Berger's

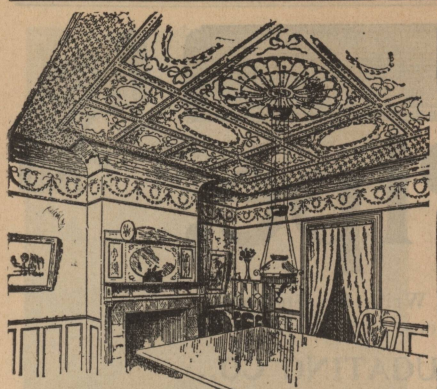
Unequaled variety of patterns, surpassing beauty of designs, and greater depth of stamping, place

Berger's METAL CEILINGS

ahead of all others. They are the only ones to be had in complete ***CLASSIFIED DESIGNS.*** Send for details.

THE BERGER MFG. CO.,
Canton, Ohio.

Berger's — Berger's



NORTHROP'S

Stamped Steel Ceilings.

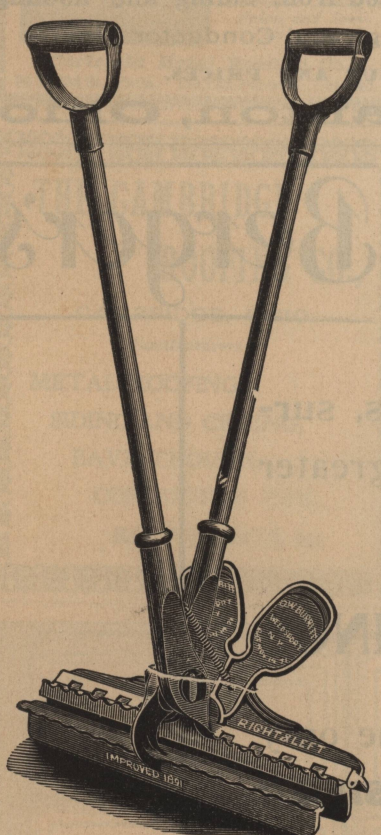
CORRECT DESIGNS.
EASILY APPLIED.
PROMPTLY SHIPPED.

Send for Catalogue and Prices.

H. S. NORTHROP,
MANUFACTURER,
40 Cherry St. New York.

THE OLD RELIABLE

Burritt's Double Seamer.



For sale by all the leading tin and metal houses in the United States.

MANUFACTURED BY

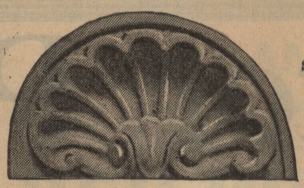
O. W. Burritt & Bro.,
WEEDSPORT, N. Y.

—ANOTHER CHANCE.—Office seeker—I have decided to stay in Washington another week.

His Friend—Something good in view?

Office seeker—Yes; the post office at Manila is vacant.—*New York Evening Journal.*

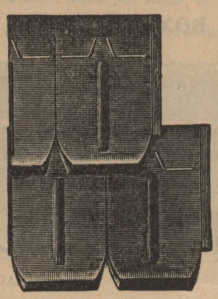
Architectural Sheet Metal



ZINC and COPPER ORNAMENTS,
For Exterior and Interior Work.
Steel Ceilings, Crestings, Pinnacles, Statuary, Enrichments and Scrolls.
Special Work Executed. Send for New Catalogue.

MARTIN J. FRAND & CO.,
110-112 Arch Street, - - CAMDEN, N. J.

THORN'S PATENT METALLIC ROOFING



TILES AND SPRING-LOCK SHINGLES.
THE BEST, MOST HANDSOME, DURABLE AND SECURE ROOFING PLATES YET OFFERED TO THE BUILDING TRADE.
Indorsed by All the Leading Architects.

Our system differs from all others in existence. We keep a complete stock of **eight designs of tile and two sizes of shingles.** Our tiles are a marvel of beauty and have the most secure and most practical side-lock ever invented.

Send for illustrated catalogue and circular.

THORN SHINGLE & ORNAMENT CO.,
1221 Callowhill St., Philadelphia, Pa.

E. J. JOHNSON & Co.
ROOFING SLATE.
OFFICE, 38 PARK ROW, - NEW YORK.
Structural Slate Work, Blackboards, Slaters' Tools, Felt, Nails, Cement, Etc.
Write for Circular of Baird Patent Snow Guard.

ROOFING
Write for Free Book.
JOHN GALT & SONS,
253 Broadway, New York.
915 N. Y. Life Building, Chicago.

SLATERS' TOOLS,
CEMENT AND NAILS,
IDEAL SLATE DRESSER.
GET OUR PRICES.
SLATE.

ROOFING SLATE

J. BRAY & CO., E. Bangor, Pa.,
Manufacturers of Genuine Bangor No. 1 and No. 1 Ribbon Slate, and dealers in Penna Black and Sea Green Slates, Slaters' Tools, Cement, Nails, etc. Write for Prices.

BLUMER - DOSCHER MFG. CO.,
Cor. Crescent and Hill Sts., Brooklyn, N. Y.

Combination Pipe Fitter

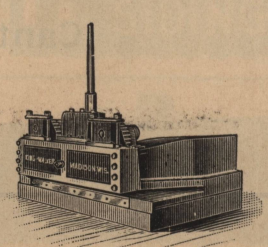
A complete outfit for working Sheet Metal Pipes.

Cuts Stove, Heater or Leader Pipes at any angle. Will also do the Crimping.

Hand Crimper also furnished separate, as per cut.

Ask your dealer for them or write for circulars and prices.

TINNERS' HAND SHEAR.



THE BEST THING OUT.

Cuts No. 0 to No. 12 iron 30 inches wide.
Slits No. 0 to No. 12 to centre of 30 inches.
Weight 1100 pounds.

This is the best and most effective shear ever offered to the trade. It will enable the average tin shop to compete with large city shops, and the price is within the reach of all.

Write for Circulars and Discounts to

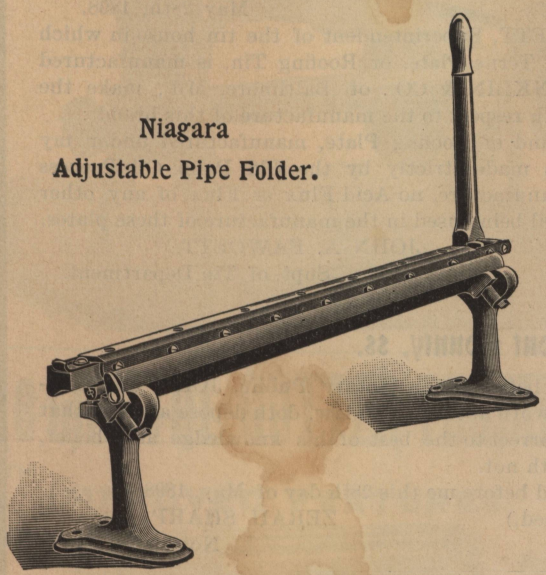
KING & WALKER CO., Madison, Wis.,
SOLE PROPRIETORS AND MANUFACTURERS.

NIAGARA MACHINE AND TOOL WORKS, BUFFALO, N. Y.,

FORMERLY NIAGARA STAMPING & TOOL CO.,

MANUFACTURERS OF

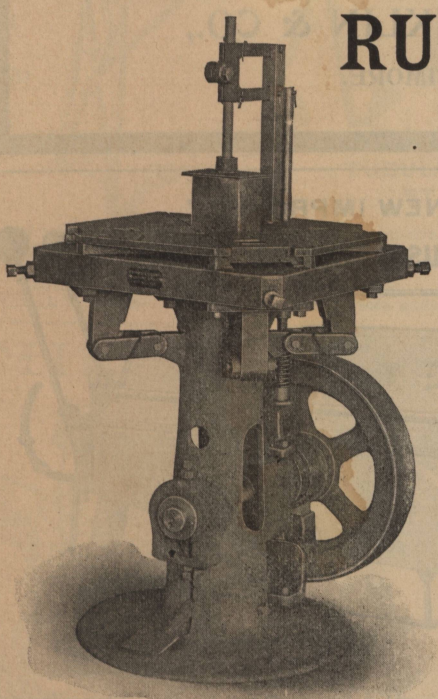
Tinsmiths' and Roofers' Tools, Shears, Presses, Dies, and Special Machinery for Sheet Metal Work.



Niagara
Adjustable Pipe Folder.

It has been found that the old style Stove Pipe Folders (Wright's, &c.) cannot be relied on to turn locks of even and uniform widths. The Folder herewith shown overcomes this difficulty entirely. The edge of the sheet is inserted and clamped the same as usual. It is folded by swinging the bar and blade, between which the material is clamped, towards the operator, and while passing the upper edge of the frame the material is bent around the folding blade. To prevent the edge of the frame from being worn off, a steel rod is inserted to protect it. This rod can be renewed at a trifling expense.

The Niagara Adjustable Pipe Folder is sure to produce a lock of uniform width the entire length, as variations in the hardness of the material have no influence whatever. Furthermore, the Folder possesses the advantage of having an adjustable gauge for locks from 3-16 to ½ inch wide. Length 30 inches.



RUDOLPHI & KRUMMEL MACHINE WORKS,

96-100 N. CLINTON ST., CHICAGO, ILLS.

Presses and Dies,
Sheet Metal and Wire Working Machinery,
Special Machinery for Manufacturing Bicycles.

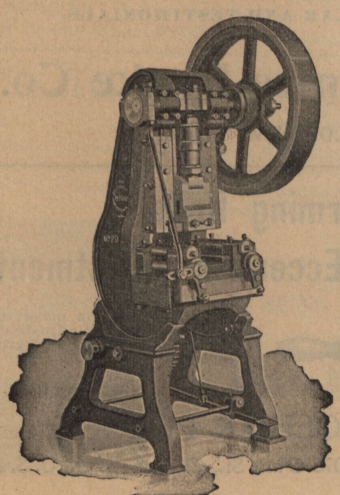
These machines are built for squeezing or crimping on the tops and bottoms of square, oblong, oval and irregularly shaped cans.

A comparison with machines previously offered will show that they are the best for these purposes. The fly-wheel is placed toward the rear, leaving the sides free for boxes, tables, etc. Thrown into operation by foot, leaving both hands free. Hold down automatic. Modern design throughout.

POWER SQUEEZERS Nos. 570 and 571.

WRITE FOR CIRCULARS.

No. 570 will take in cans up to 7 inches square.
" 571 " " " 10 "



E. S. STILES, - Treas. and Gen'l Manager.

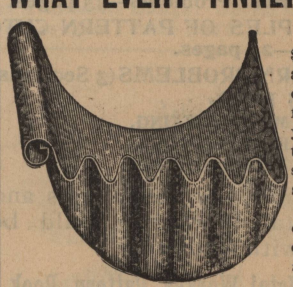
THE
E. S. STILES PRESS CO.,

203 Main St., WATERTOWN, N. Y.

PRESSES,
DROP HAMMERS,
POWER SHEARS.

Special and Automatic Sheet Metal Machinery.

WHAT EVERY TINNER WANTS.



On receipt of $1.00 I will send a pair of my quick-working forms on which you can close up the end of all sizes of gutters as shown herewith. Send draft, post-office or express order, or personal check.

CIRCULARS SENT ON APPLICATION.

G. E. BISHOP, - Dowagiac, Mich.

SCHWERDTLE & SIEBERT,
STENCILS-BURNING BRANDS
STEEL STAMPS & DIES
SEALS-MACH. PLATES-CHECKS
BRIDGEPORT, CONN.

The New Metal Worker Pattern Book.

425 Pages. 744 Illustrations.
Size 10 x 13 Inches.

A new treatise on pattern cutting as applied to all branches of sheet metal work.

Cloth Bound, Price $5.

This work contains a collection of **218** problems and an elaborate explanation of the principles of pattern cutting, including Triangulation.

It embodies the problems of the former Metal Worker Pattern Book, all of which have been revised, and many of which have been entirely rewritten and solved by more approved methods. To these have been added **75** new problems and much other new material and explanatory matter, making this work a model of completeness in every respect.

ARRANGEMENT.

In point of arrangement the new work far surpasses the former one in that the problems are classified under three different heads, and simply indexed, and also that by means of a table of contents any required department of the work can be easily found.

CONTENTS.

While Chapter VI, comprising the greater part of the work, is devoted to the solution of problems, the five preceding chapters thoroughly explain the principles of pattern cutting, and place the student in possession of the preliminary information necessary to a thorough understanding of the subject.

SUMMARY OF CONTENTS.

I. Terms and Definitions—15 pages.
II. Drawing Instruments and Materials—13 pages.
III. Linear Drawing—6 pages.
IV. Geometrical Problems—35 pages.
V. PRINCIPLES OF PATTERN CUTTING—25 pages.
VI. PATTERN PROBLEMS (3 Sections)—325 pages.
1. MITER CUTTING,
2. FLARING WORK,
3. TRIANGULATION.

All Tinners, Cornice Makers and Sheet Metal Workers should be provided with a copy of

The New Metal Worker Pattern Book.

Price $5, post or expressage paid.

DAVID WILLIAMS COMPANY,
PUBLISHERS,
232-238 William St., New York.

"Glendale" Roofing Tin.

May 28th, 1898.

I, JOHN A. FAWCETT, Superintendent of the tin house in which the "Glendale" brand of Terne Plate, or Roofing Tin, is manufactured for Messrs. LYON, CONKLIN & CO., of Baltimore, Md, make the following declaration with respect to the manufacture of this brand:

The "Glendale" brand of Roofing Plate, manufactured under my personal supervision, is made strictly by the Old Palm Oil Process throughout the entire manufacture, no Acid Flux or Flux of any other kind except Pure Palm Oil being used in the manufacture of these plates.

(Signed,) JOHN A. FAWCETT,
Supt. of Tin Department.

State of Ohio, Belmont County, ss.

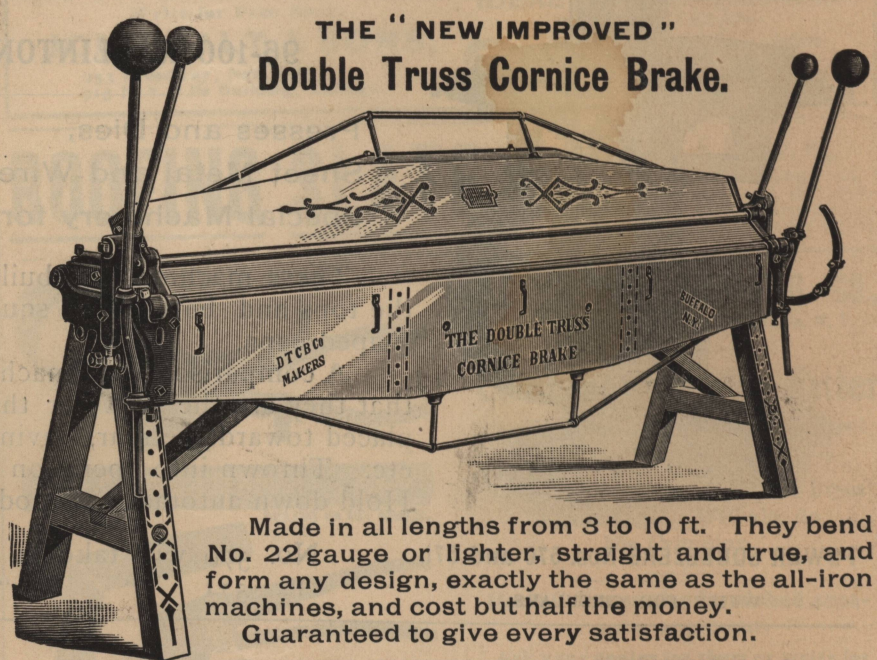
Personally appeared before me, a Notary Public, JOHN A. FAWCETT, who being duly sworn according to law, doth depose and say that the above statement is correct to the best of his knowledge and belief, and further deponent saith not.

Sworn and subscribed before me this 28th day of May, 1898.

(Signed,) ZERAH SHARP,
SEAL.] Notary Public.

LYON, CONKLIN & CO.,
BALTIMORE.

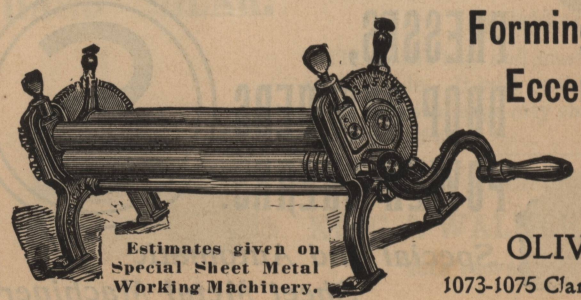
THE "NEW IMPROVED"
Double Truss Cornice Brake.



Made in all lengths from 3 to 10 ft. They bend No. 22 gauge or lighter, straight and true, and form any design, exactly the same as the all-iron machines, and cost but half the money.
Guaranteed to give every satisfaction.

SEND FOR NEW ILLUSTRATED CIRCULAR AND TESTIMONIALS.

The Double Truss Cornice Brake Co.,
259 GRANT STREET, BUFFALO, NEW YORK.



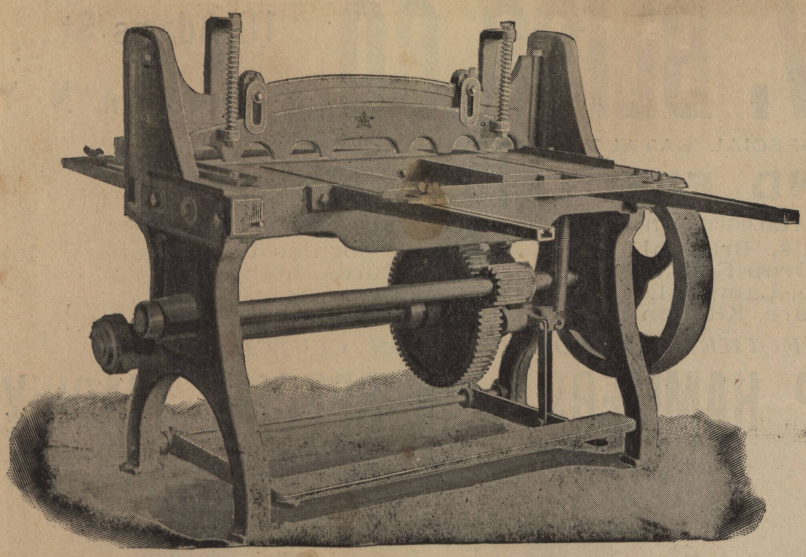
Forming Rolls, Eccentric Adjustment.

The advantage in using this machine is the quick adjustment of the back roll by means of graduated eccentrics.

Send for catalog and prices.

Estimates given on Special Sheet Metal Working Machinery.

OLIVER POCOCK,
1073-1075 Clark St., Cincinnati, O., U. S. A.



SHEARS

in different lengths, from 2 feet to 12 feet, to cut any thickness of metal desired.

Catalogues furnished on application.

WEST MFG. CO.,

7th and Hudson Sts.,

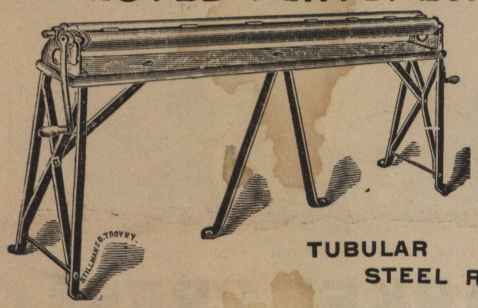
BUFFALO, N. Y.

The CAPITAL GUTTER FORMER

WITH

IMPROVED FEATURES.

Best Machine Made

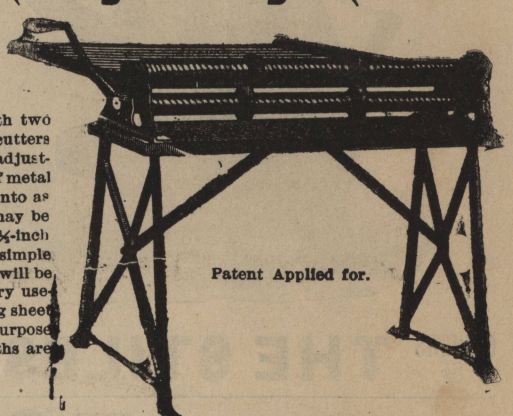


Simple. Durable. Rapid.

TUBULAR STEEL ROLLS.

is adapted to form gutter from 3 inches to 7 inches inclusive. The forming of the bead and gutter is practically a continuous operation. Capacity 1000 feet perfectly formed gutter per hour with two ordinary men or boys.

The Rotary Slitting Shears



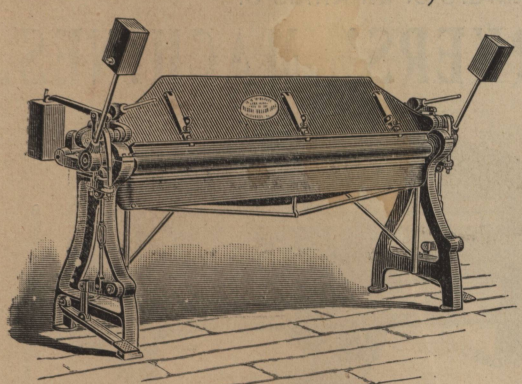
Patent Applied for.

are provided with two or more pair of cutters which are easily adjusted to cut a sheet of metal 30 inches wide into as many strips as may be desired, from ¼-inch and wider; is simple and durable, and will be found to be a very useful tool for slitting sheet metal for any purpose where long lengths are required.

Mention THE METAL WORKER.

For further information and prices address DENNIS J. WHELAN, Troy, N. Y., Mfg. Sheet Metal Working Machinery.

THE PECK, STOW & WILCOX CO.,



HARE'S FOUR LEAF CORNICE BRAKE.

Hundreds sold and **never a complaint.** Works easily and rapidly. The universal verdict is, **IT IS THE BEST IN THE WORLD.**

96 inches long. Price $250.

New York,

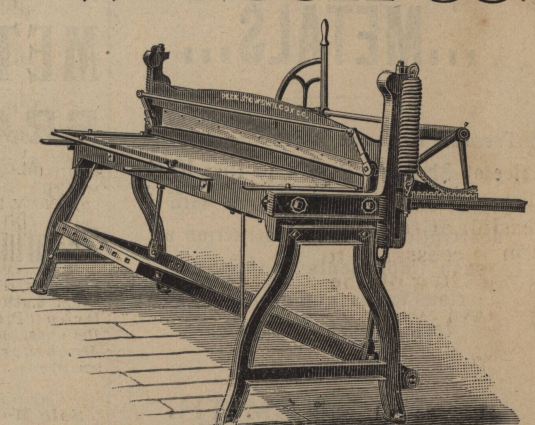
—AND—

Cleveland, Ohio.

Tinsmiths' Tools of the Highest Grade.

Our **Improved Eureka Cornice Brake.** Will bend No 20 iron.

96 inches long. Price $185.



CORNICE MAKERS' SQUARING SHEARS

With Lever Arc, Automatic Gauge. Will cut No 22 iron.

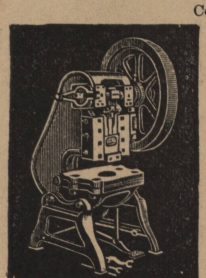
97 inches long. Price $275.

The Toledo Machine and Tool Co.,

MANUFACTURERS OF

Power Punching Presses, Drop Presses, Trimming Presses, Stamping Presses, Riveting Presses, Embossing Presses, Presses with Automatic Feeds, Chain Presses and Machines for working Bar and Sheet Metals.

Complete outfits for Can Making.

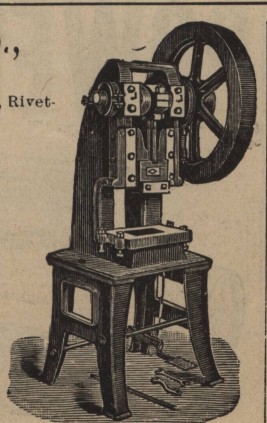


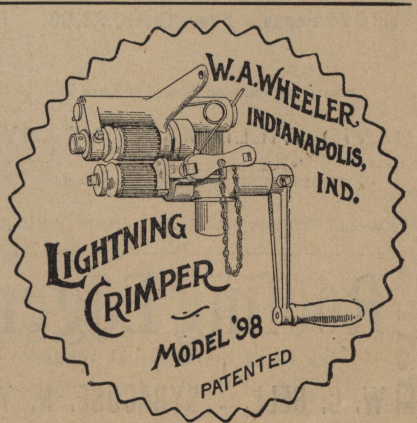
SEND FOR CATALOGUE NOW BEING PRINTED

The Toledo Mch. & Tool Co,

Superior and Oak Streets,

TOLEDO, O.





WESTERN OFFICE:
96 W. WASHINGTON ST.,
CHICAGO, ILL.
WATCH OUR SPACE.

E. W. BLISS CO.,

16 Adams St.,
Brooklyn, N. Y.

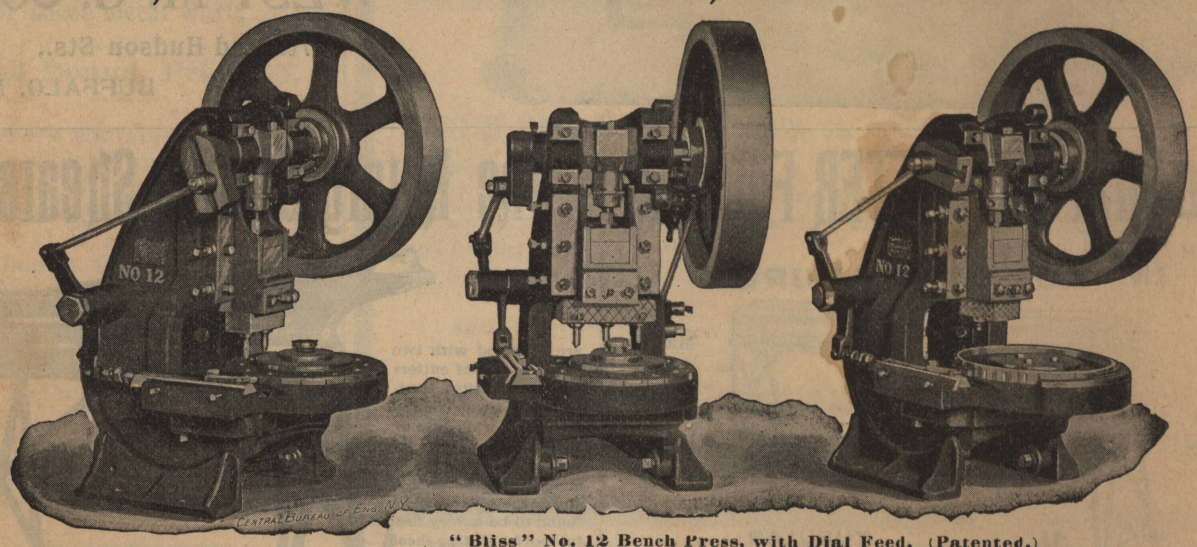
SPECIAL CATALOGUES OF

BICYCLE AND ELECTRICAL TOOLS.

ALSO 400-PAGE CATALOGUE OF MACHINERY FOR MANUFACTURING
Agricultural Implements, Brass Goods, Britannia Ware, Burners, Cornice Work, Cutlery, Coal Hods, Dripping Pans, Drop Forgings, Forks, Gas Fixtures, Light and Shelf Hardware, Lamps, Locks, Musical Instruments, Silverware, Kitchen Utensils, Etc., Etc.

MANUFACTURERS OF THE WALDRON FRICTION CLUTCHES.

PRESSES, DIES. DROP HAMMERS, and SPECIAL MACH'Y.



"Bliss" No. 12 Bench Press, with Dial Feed. (Patented.)

OWNERS OF **THE STILES AND PARKER PRESS CO.**

PRESS-WORKING OF ...METALS...

A Treatise upon the Principles and Practice of Shaping Metals in Dies by the Action of Presses, together with a description of the construction of such implements in their various forms, and of the materials worked in them.

BY

OBERLIN SMITH.

Illustrated with 433 Engravings.
276 Pages. 8vo. Cloth, $3.00.

Sent, post-paid, on receipt of price by

DAVID WILLIAMS COMPANY,
PUBLISHERS AND BOOKSELLERS,
232-238 William Street, - NEW YORK.

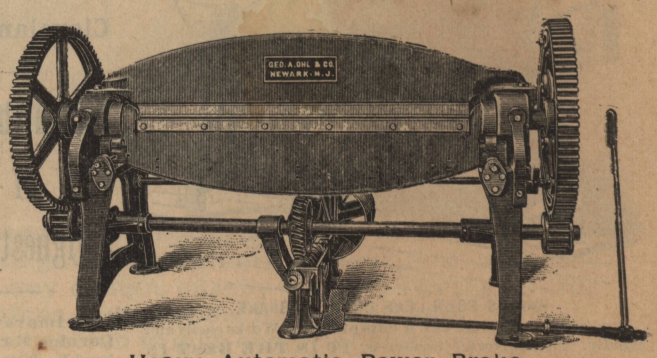
GEO. A. OHL & CO.,

(Telephone 873.)
157, 159, 161 Oraton St., NEWARK, N. J.,
Manufacturers of all kinds of

METAL WORKERS' MACHINES,

BRAKES
(ALL SIZES),
Heavy and Light
Squaring Shears,
Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and *Special Machinery* of all descriptions.

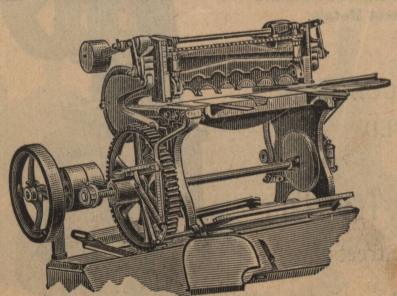
Sole Manufacturers of the Vulcan Machinery.



Heavy Automatic Power Brake.

POWER SHEAR

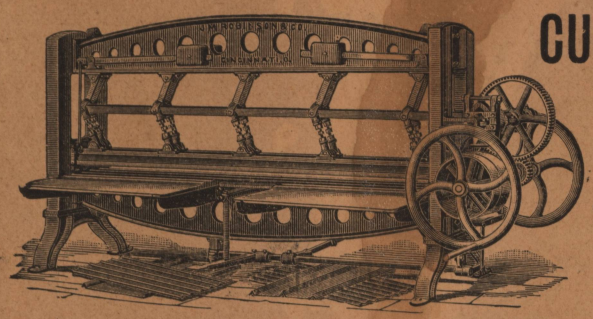
For Squaring, Trimming and Slitting No. 6 Or ⅛ Plates and lighter Gauges. Made in Lengths up to 11 ft.



The most practical and powerful shear on the market. Has all improvements. Write for circulars descriptive of this and 100 other sheet metal working tools.

BERTSCH & COMPANY,
CAMBRIDGE CITY, IND., U. S. A.
Agents: MERCHANT & CO., Philadelphia, Pa.

Bell's **Roofing Edger**
TEN TIMES QUICKER THAN TONGS.
W. C. BELL, - SYRACUSE, N. Y.

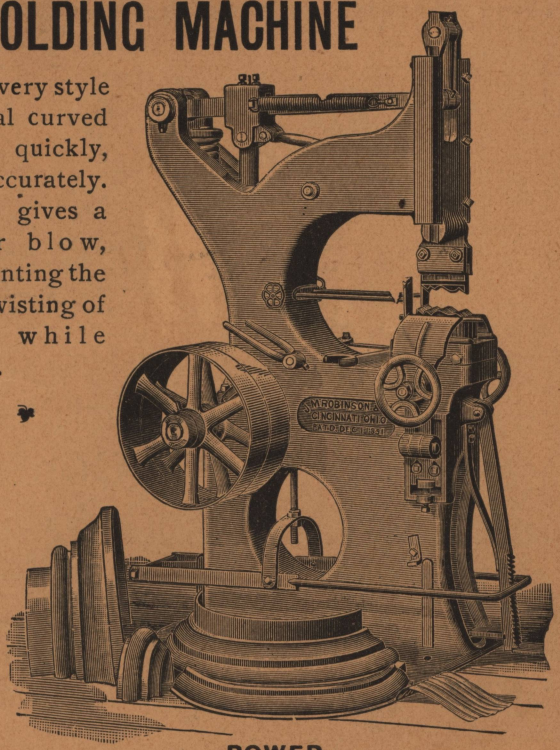


ROOFING AND BENDING MACHINE.

With Dies suitable will form Sheet Metal Roofing, Siding, Ceiling, Weather-Boarding, Skylight Bars, Metal Lathing, Gutters, Ridge Caps, Escalloped Steel Sheets and Cattle Troughs. Will bend and form No. 10 gauge and lighter in 6, 8, 10 and 12 foot lengths.

CURVED MOLDING MACHINE

For making every style of sheet metal curved moldings quickly, cheaply and accurately. The hammer gives a perpendicular blow, entirely preventing the drawing or twisting of the material while being formed.



POWER.

J. M. ROBINSON & CO.,

CINCINNATI, OHIO.

Builders of Sheet Metal Working Machinery.

SHEET METAL TOOLS ALL KINDS.

Presses, Dies, and Special Machinery.

ADRIANCE MACHINE WORKS, 169 Plymouth Street, Brooklyn, N. Y.

COMBINED Crimper and Corrugator.

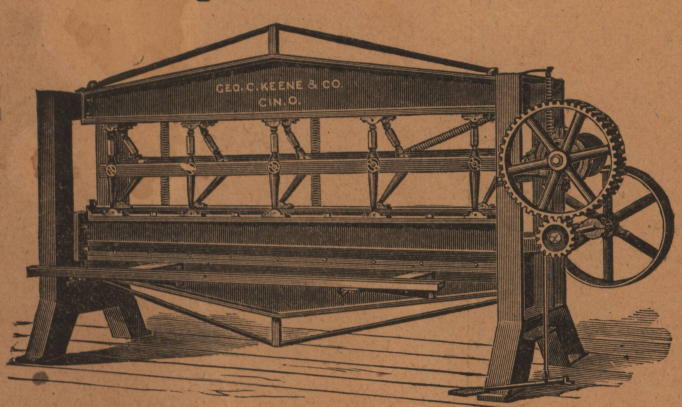
Outfits for Iron Roofing Establishments a Specialty.

GEO. C. KEENE & CO.,

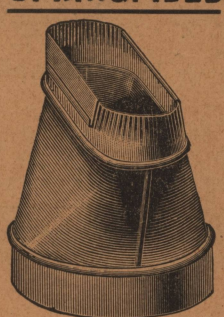
Cincinnati, Ohio.

New York Agency, 26 Cliff St.

Makers of the KEENE CORNICE BRAKE.



SPRINGFIELD HOT AIR PIPE AND FITTINGS.



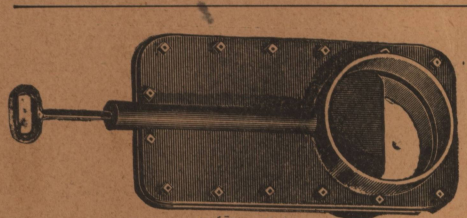
MANUFACTURED BY

SPRINGFIELD CORNICE WORKS,

ARTHUR PARKS SMITH, Proprietor,

SPRINGFIELD, MASS.

Send for Catalogue.



Improved Wind Gate.

MINER & PECK MFG. CO.,

MANUFACTURERS OF

Peck's Patent Drop Press Blast Forges, Wind Gates, etc.

419 CHAPLE ST., COR. WALLACE,

NEW HAVEN, CONN.

BURRING MACHINE

$7.90 WITH STAND.

We will tell you all about it for the asking.

L. D. BERGER, PHILADA., PA.

IMPROVED

PATENT AUTOMATIC CAN BODY Lock Seaming Machines.

COMBINATION

Presses and Dies.

SHEET METAL TOOLS, &c.

W. J. GORDON 218 New St., PHILADELPHIA, PA.

—How He Won Her.—"If I were a man," she said, "you wouldn't find me here to-day. I'd be away, fighting for my country."

"I you were a man," he replied, "you wouldn't find me here to-day, either. I, too, would be away, fighting for my country."

After that, all he had to do was gain papa's consent.—*Ex.*

We are now settled in our larger and lighter Boston offices. Come and see us and look over our large sample rooms at 55 Portland street.

Barstow Stove Company,

No. 55 Portland St., Boston.
No. 228 Water St., N. Y.
Foundry at Providence, R. I.

There is no Roofing Tin

"JUST AS GOOD"

as the **"TAYLOR OLD STYLE"** brand.

The "TAYLOR OLD STYLE" is

THE OLDEST ROOFING TIN MADE

and can therefore show the greatest test of durability.

N. & G. TAYLOR CO.,

Sole Manufacturers,

Established 1810. PHILADELPHIA.

THE GREAT CHURCH LIGHT REFLECTORS FOR OIL, GAS OR ELECTRIC LIGHT
I. P. FRINK 551 PEARL ST. N.Y.

L. & R. WISTER & CO.,

Bullitt Building, Philadelphia.

Dunbar Foundry and Forge Irons.
Kemble Pig Iron.
Allentown Iron Co.
Warner & Co.'s Wash Irons.

Dealers in all kinds of Scrap Iron and Steel.

BRUCE & COOK,

TINNERS' TOOLS and MACHINES, TINNERS' SUPPLIES.

186, 188 & 190 Water Street, and 248 & 250 Pearl Street.
NEW YORK.

UTICA PIPE FOUNDRY CO.

CAST IRON PIPE and SPECIALS for WATER and GAS. Also Flanged Pipe and Fittings, Hydrants, Gates, Pig Lead, etc. CHAS. MILLAR & SON, Selling Agents, Utica, N. Y. Manufacturers of Lead Pipe and Plumbers' Materials. Wholesale Eastern Agents Akron Vitrified Sewer Pipe.

W. DEWEES WOOD COMPANY,

McKEESPORT, PA.,

Manufacture superior grades of Sheet Iron and Sheet Steel.

EXCLUSIVE MAKERS OF

Wood's Patent Planished Sheet Iron.

Gauges, 24 to 28 inclusive; Width, 28 inches; Lengths, 56, 60 and 72 inches.

Wood's Patent Planished Locomotive Jacket Sheet Iron.

Gauges, 18 to 23 inclusive; Widths, 28 and 30 inches; Lengths, 56, 60, 72 and 84 inches.

Wood's Smooth Finished Uniform Color Sheet Irons and Sheet Steel.

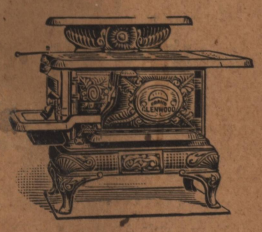
Cleaned and free from dust; all standard gauges, widths and lengths.

These celebrated goods are kept constantly in stock by the leading jobbers, or may be had of the makers

W. DEWEES WOOD COMPANY,

General Offices and Works, - - McKEESPORT, PA.

When to Bake



anybody can tell with a

GLENWOOD.

Write the Weir Stove Co., Taunton, Mass.

HEATER PIPE TIN.

We have the following sizes in stock:

IC & IX, 20 x 26, for 8 in. pipe.
IC & IX, 20 x 29½, " 9 in. "
IC & IX, 20 x 32½, " 10 in. "
IC & IX, 20 x 35¾, " 11 in. "
IX, 20 x 39, " 12 in. "
"Cupola" Brand.

Superior quality and finish. We invite correspondence before buying.

McCLURE & CO.,

PHILADELPHIA, 115 North 7th St.
PITTSBURG, PA., 211–213–215 Second Ave